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REGIONAL
TRANSPORTATION
PLAN

FOR THE SAN FRANCISCO BAY AREA

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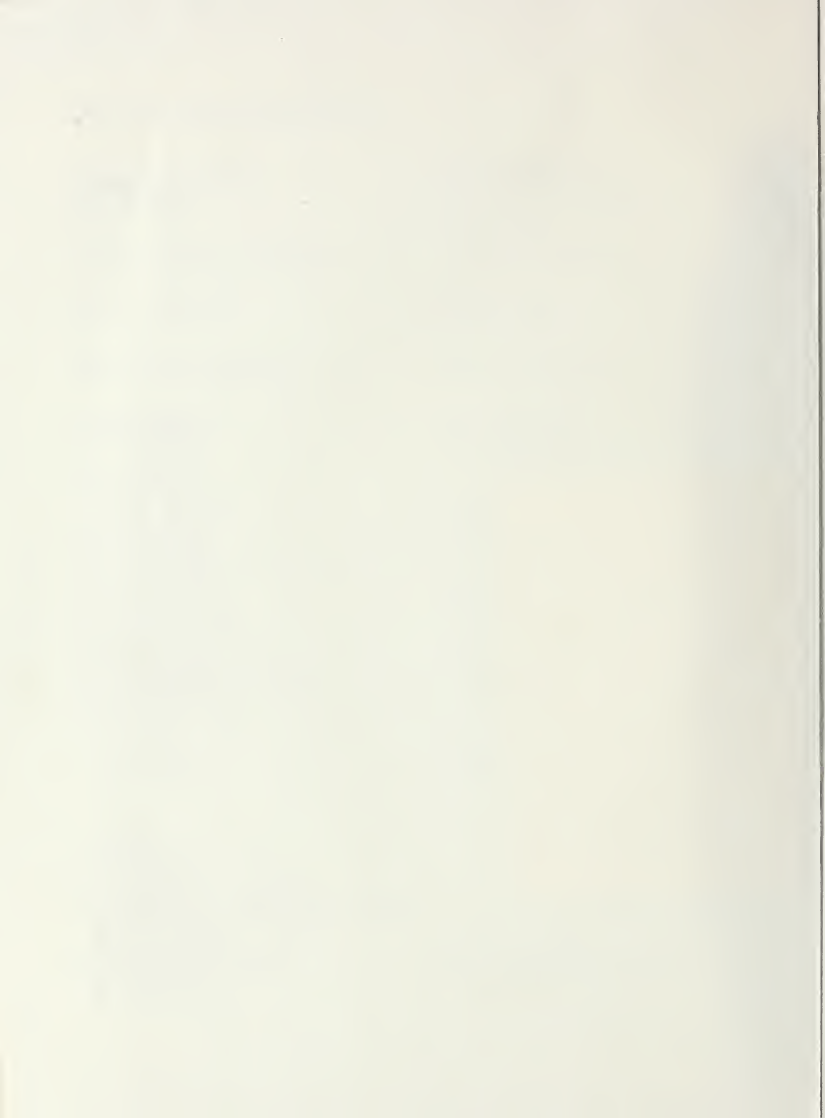


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PREFACE

The public's desire to reduce air pollution, traffic congestion and the use of foreign oil has been declared emphatically. This desire is reflected in the Federal Clean Air Act, the 1988 California Clean Air Act, and Proposition 111 in 1990. MTC is determined to establish an emphasis on the use of transit rather than highways as the primary mechanism for expanding mobility in the future. Consequently, MTC is encouraging Cities, Counties, Traffic Authorities and Caltrans to propose flexible funding for transit rather than highway programs in future Regional Transportation Improvement Program submittals.

The 1991 RTP breaks new ground by initiation of a Metropolitan Transportation System (MTS). The MTS is intended to provide a multi-modal framework for incremental development of the next round of capital and system operations strategies.

Prior to adoption of the 1991 RTP, the Commission completed ten community meetings and three public hearings devoted to soliciting citizen comment on what should be expected of the RTP. Of the wide-ranging constructive criticisms voiced, the characterization that seemed to capture public sentiment best came from the League of Women Voters, "...the RTP as written seems to be treading water." The MTS initiative doesn't go far enough; more is needed - now. The Commission agrees.

In July 1991 the Commission adopted the following principles to guide the development of the RTP:

1. That the Commission adopt in September 1991 a Regional Transportation Plan (RTP) that embodies those projects already committed to essentially as listed in the proposed Transportation Improvement Program (TIP), also scheduled for adoption in September. Other proposed projects would be referenced only for future consideration.
2. That the Commission direct staff to initiate a process to select a package of projects and operating strategies, giving preference to transit, for incorporation in the 1992 RTP revisions.
3. That the Commission establish complementary principles listed below, which provide for the full range of travel essential to the basic functions of the region's economy. If flexible transportation funds are to be directed to transit and local arterials, a complementary effort is needed to smooth the flow of traffic on freeways. In particular, through and freight traffic are important. The following basic principles are intended to enhance the prospects of successfully implementing the Commission's policy direction:
 - a. Continued advocacy of flexible funding to permit implementation of capital and operations decisions.
 - b. Encouragement of Caltrans, transit operators, and local public works officials to engage in cooperative endeavors required to improve traffic flow in a system-wide context. The mounting interest in Intelligent Vehicle

Highway Systems (IVHS) will have limited application unless metropolitan operating partnerships evolve. The MTS provides the foundation for this effort. Major elements include the definition of system-wide and operational management strategies - HOV lanes, ramp meters, gateways, transit priority treatments, freight access, and other traffic operation system (TOS) components.

- c. Support for highway investments when they are required to facilitate transit movements, optimize HOV utilization and mitigate unacceptable traffic bottlenecks.
- d. Development of a joint MTC-transit operator initiative for a rail transit program extending beyond the current Resolution No. 1876 committed program. Here the appropriate blending and integration of intercity, commute, light and heavy rail and busways must be considered.
- e. Special efforts to insure adequate transit operating funds. Historically capital funding is more readily obtained from the Legislature and Congress. A transit strategy dependent upon HOV utilization and bus/rail integration cannot omit the critical bus subsidy.
- f. Encouragement of transit and highway investments that will promote more efficient land use patterns.

These strategies will hasten development of an RTP which will build on effective investments to construct and operate the MTS.

OVERVIEW

The Metropolitan Transportation Commission (MTC) was created by the California State Legislature in 1970. One of its key statutory duties is to prepare a Regional Transportation Plan (RTP) for the nine counties of the San Francisco Bay Area (Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma). The first plan was prepared and adopted in 1973; subsequent plan updates have generally been produced on an annual basis. The 1991 Regional Transportation Plan is the current statement of transportation policy and recommended actions by MTC for the Bay Area.

The context for this RTP is provided by the first two chapters of the document, "Key Issues" and "Institutions and Program Linkages." The first chapter briefly discusses relevant topics, such as traffic congestion, energy, and air pollution, that have helped shape regional transportation planning goals. The second chapter describes the institutional framework within which MTC operates, and summarizes recent state and federal legislation that has significantly affected or altered MTC's roles and responsibilities. Together, these two chapters provide a background for understanding the development of goals, policies, and recommended actions in the 1991 RTP.

The third chapter is the "Policy Element," an explicit statement of the goals, objectives, and policies of the Regional Transportation Plan. The fourth chapter--the "Action Element"--is the heart of the RTP, encompassing a description of the current *Metropolitan Transportation System* for the Bay Area, an analysis of future transportation conditions, and recommendations for system improvements and modifications. The final chapter is the "Financial Element," which summarizes the cost of plan implementation, estimates future revenue sources, and discusses ways of reducing or eliminating anticipated funding shortfalls.

Appendices contained in this document include a glossary of technical terms used in the RTP, a description of the RTP implementation process, a summary of air quality transportation control measures, and a listing of key supporting documents used in the preparation of this plan.

CHAPTER 1:
KEY ISSUES IN THE BAY AREA



As the region grows into the 21st century the need for an efficient transportation system will intensify. The region's ability to provide this system for the Bay Area's residents will be determined by a variety of financial, institutional, and environmental factors. The dimensions of the task and key issues are explored below.

A. REGIONAL OVERVIEW

1. Geographic Characteristics

The Bay Area's nine counties - Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma - occupy roughly 7,000 square miles. The major topographical features of the region are San Francisco Bay, the plains surrounding it, and the hills and valleys of the coast ranges. Because the coast ranges occupy a majority of the land area, urban development and transportation facilities have been concentrated in the narrow plains surrounding the Bay and in the adjacent valleys.

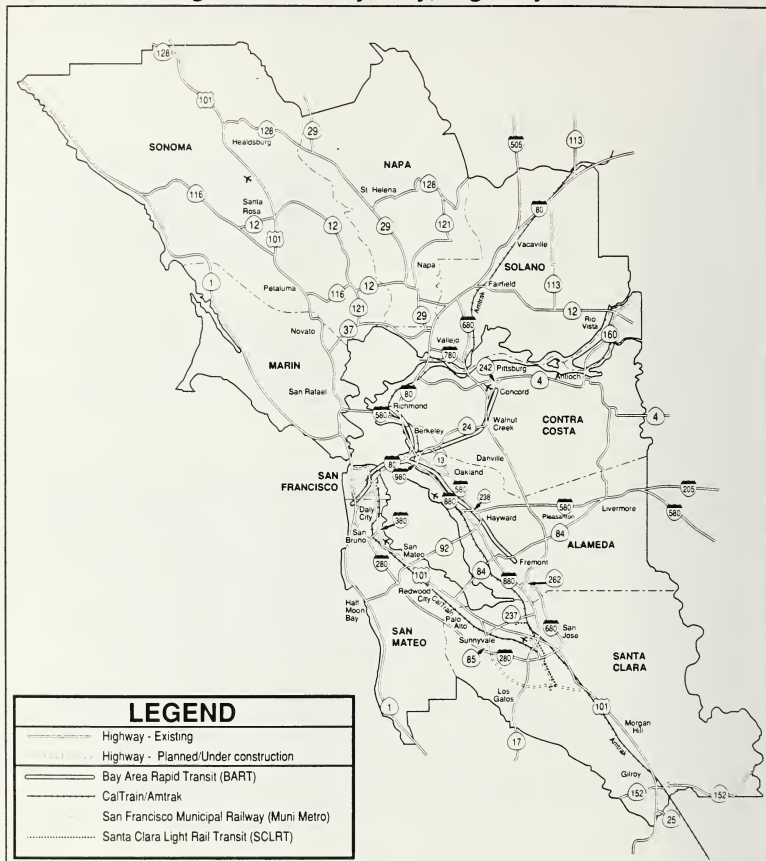
The largest and most important single feature of the region is San Francisco Bay (including San Pablo Bay to the north), covering almost 435 square miles and affecting climate, land use patterns, and transportation. The majority of the region's residents live in the coastal plain around the Bay. The Bay serves as an excellent natural harbor, and as a barrier to travel between the San Francisco Peninsula and the East Bay and North Bay.

2. Existing Transportation System

The Bay Area's transportation system has been defined by topography and shifting population and employment growth. Today, the Bay Area surface transportation network is a combination of Interstate and state freeways, local streets and roads, expressways, bike paths, sidewalks, and a wide assortment of transit technologies--heavy rail, light rail, intercity rail, buses, trolleys, and ferries. Within the Bay Area are miles of secluded coastal and mountain roadways, and the busiest freeway interchange in the nation outside of Los Angeles; the nation's first modern heavy rail transit system (BART) and one of the country's newest light rail systems (Guadalupe); and seven bridges spanning the San Francisco and San Pablo bays and Sacramento and San Joaquin rivers.

Figure I-1 provides an overview of the Bay Area transportation network. The heavily urbanized stretches near the Bay itself are well served by a variety of freeways, expressways, and transit systems. BART, CalTrain, and the Guadalupe Light Rail system in Santa Clara County form the region's backbone rail system; the Muni Metro Rail system offers extensive light rail connections within San Francisco. Route 101 runs the length of the Bay Area, from Gilroy in the south, through San Jose along the west side of the Bay to San Francisco, then across the Golden Gate

Figure I - 1
Region — County, City, Highway & Rail



MTC Graphics - October 1999

Bridge through Marin and Sonoma counties. In the East Bay, I-880 and I-80 connect San Jose, Fremont, Oakland, Richmond, and the developing corridor between Vallejo and Sacramento. I-680 provides an additional linkage between San Jose and cities in the East Bay.

On the other side of the Berkeley-Oakland hills, Interstate freeways I-680 and I-580 serve the burgeoning communities in eastern Alameda and Contra Costa counties. These freeways, built to handle suburban traffic patterns, are now serving much heavier volumes, as suburban enclaves and small towns become urban centers. Similar growth pressures are being felt in Solano, Sonoma, and northern Marin counties. Housing in San Joaquin County provides affordable living for many Bay Area workers who regularly commute over the Altamont Pass on I-580.

The Bay Area is linked to other parts of the state and nation by its interstate highways, by intercity bus and rail (Amtrak) services, and by three major international airports. Smaller general aviation airports also provide connections to neighboring communities. The Bay Area is home to six modern seaports which handle large volumes of containerized and other cargo shipped between the U.S. and overseas nations.

3. Transportation Facts and Figures

See Table I-1.

B. KEY ISSUES

For seven years, Bay Area citizens have ranked transportation as their number one regional concern in public opinion polls performed by the Bay Area Council, a business sponsored organization. Regional solutions to the transportation "problem" must factor in issues that are of vital interest to Bay Area residents: tolerable levels of congestion, acceptable levels of growth and consumption of open space, economic vitality, clean air, energy conservation and the availability and equity of transportation services for the transportation disadvantaged. These topics are discussed below as a means to provide the context for considering the transportation recommendations provided in the Action Element of this Plan.

1. Transportation System Performance

By almost any measure transportation service levels are on the decline. Undoubtedly the image that occurs to most people when they think of transportation problems is a line of cars inching along a busy freeway or crowded street, giving ironic weight to the phrase "rush hour." The Bay Area roadway system has grown steadily more congested over the past few decades, and will continue to do so for the foreseeable future. For example, in 1980, an average peak-period trip along I-80 from the Carquinez to the Bay Bridge took 31 minutes; by 1986, the length of time had increased to 44 minutes.

Congestion is lost time, both in an economic and in a personal sense. Current congestion reflects a variety of imbalances, including the location and density of development in relation to transportation services, funding constraints relative to demand for services, and the

TABLE I-1 **MTC Region Facts and Figures**

Demographics

Number of Counties in MTC Region	9 Counties
Square Miles in Region	7,179 Sq. Miles
Population (1990 Census)	6,024,000 Persons
Density	839 Persons/Sq. Mile

Transportation Infrastructure

Miles of State Hwy. in Region (Centerline Miles, 1988)	1,410 Miles
including	320 Miles of Interstate
Miles of Local Streets and Roads (Centerline Miles, 1988)	17,770 Miles
Miles of HOV Lane (on state highway system, 1990)	100 Miles

Daily Travel in 1990

Autos Owned	4,157,000 Autos
Households With No Auto (1987)	11%
Total Daily Miles Traveled	104,363,000 Miles
Total Daily Trips	17,800,000 Trips
Total Daily Work Trips	4,337,000 Trips
Mode Share for Work Trips:	
Drive Alone	72%
Shared Ride	18%
Transit	10%

Miscellaneous

Number of Public Transit Operators	25
Number of MTC-Funded Paratransit Providers	40
Number of Publicly-Used Ports	6
Number of Commercial Airports	5
Number of Publicly-Owned General Aviation Facilities	15

comparative costs of alternative travel modes. Caltrans defines congestion on a facility as an average speed of less than 35 miles per hour for a period of more than 15 minutes. By this definition, 25 percent of the freeway miles in the urbanized portion of the Bay Area (Alameda, Contra Costa, Marin, San Francisco, San Mateo, and Santa Clara counties) were congested at some point during a typical weekday in 1989.

In addition to increasing congestion during the peak period, the busiest parts of the Bay Area transportation system have experienced a broadening peak period. At one time, drivers commuting to work a little early or late could expect to miss most of the severe congestion. In recent years, many parts of the Bay Area freeways experienced 2 or 3 hours of intense traffic during both morning and afternoon commutes. Carpool hours on the Bay Bridge have expanded from 6-9 AM to 5-10 AM to accommodate an extended traffic flow.

Crowding also occurs on many transit systems throughout the Bay Area. BART and Muni Metro lines are frequently "standing room only" in the peak periods, as are many heavily-used bus lines. Express buses operating on freeways often travel no faster than the cars in the next lane, leaving them "express" in name only. Local streets and roads also experience peak period congestion, due to a combination of work, shopping, school and other trips that utilize local streets in order to avoid traffic jams on the freeways.

The Bay Area currently spends about \$155 per capita per year on construction, maintenance, and operation of its highway and transit system (including local streets and roads). While this amount sounds large, expenditures have actually decreased over time as the value of money erodes from inflation. Many transportation revenue sources are not "indexed," i.e., do not keep up with inflation. Voter reform has withdrawn or severely reduced certain transportation revenues previously available to Bay Area transit operators, such as property tax funds. A striking example of the condition of transportation funding is the fact that for several years running, the state was carrying shortfalls of billions of dollars in its highway program. Given this condition, the custodians of the Bay Area transportation systems have sought to garner public support for additional investment. Fortunately, events suggest a reversal of the transportation funding crisis as the voters have approved new county sales taxes, higher bridge tolls, state rail bonds, and an increase in the state gasoline tax--all to go to transportation investments.

History has shown that another element also needs to be factored into our thinking about the transportation future, and that is the rate and form in which new technology enters the market place. We have seen a number of novel proposals from high speed trains that are electromagnetically supported and propelled, to super quiet aircraft, to personal vehicles that run on electric power and navigate the freeways with computer assistance, to electronic freeway and roadway traffic management systems. The questions raised by new technology are as complex as the potential is alluring. When will these technologies be available, how much will they cost, who will coordinate government and private sector actions, and what about such mundane, but important issues as insurance liability?

Issues:

- o Many Bay Area highway and transit lines face accelerating levels of delay and crowding.
- o Various components of the Bay Area's transportation network need to be coordinated to function as an integrated system.
- o Opportunities to make the most cost-effective system improvements are limited due to overall funding shortages and the need to change existing categorical funding programs.
- o The effects of advances in technology on transportation system capacity, safety, and convenience are not yet well known.
- o The increasing demand by autos for roadspace and parking space dictate a growing need for effective traffic and demand management strategies to temper that trend.
- o The continuing threat of earthquakes in the Bay Area necessitates more earthquake resistant facilities and "backup" transit systems.

2. Growth, Land Use and the Economy

The Bay Area is well known for its natural beauty, quality of life, and energetic and well educated work force. All of these conditions add up to a growing population (now about 6 million people) and to a job rich area for technology and innovation. Admittedly, even the strongest economy will experience cyclical downturns, but there are no indications that the Bay Area will lose jobs or population in the future. The Association of Bay Area Governments (ABAG) projects the region will add roughly 1,060,000 people and 1,039,000 jobs between 1990 and 2010. Within the Bay Area, the relocation of employment is evident. Downtown office space in San Francisco and Oakland grew at a slower rate in the 1980's compared to suburban office space. Silicon Valley emerged as a major office center in the Bay Area, adding 180,000 new jobs in the 1980s. At Pleasanton and Concord, job growth exceeded the combined job growth of Oakland and San Francisco by a third in the '80s. These relocation patterns reflected economic interests of employers seeking closer proximity to the Bay Area work force and less expensive land and operating costs. Technology has supported this decentralization by making it easy to communicate between satellite and main offices in the Bay Area.

The Bay Area transportation system, built to move commuters from suburban homes to downtown job centers, was not equipped to handle large new job centers in the suburbs. The migration of jobs to the suburbs had at least two immediate negative impacts on the Bay Area's transportation system:

- o Suburban freeways such as I-680 were not built to carry traffic generated by large scale suburban office parks, leading to rapid growth in congestion;
- o Mass transit systems, which are most effective where jobs are highly concentrated in a small area (such as downtown Oakland and San Francisco), did not serve workers commuting to a multitude of suburban

worksites. As a result, transit is unable to relieve more than a small fraction of the congestion that develops on many suburban freeways in the Bay Area.

Also, for those freeways linking the central city with the suburbs, the production of affordable housing in areas distant from the city cores added more and more traffic to facilities that were essentially built out along their right-of-ways.

Aside from these "people moving" problems, the movement of goods and freight is equally crucial to the economic health of the Bay Area. Trucks and freight railroads need to move easily within the Bay Area and between the Bay Area and other parts of the state. As our economy becomes more service oriented, a greater number of commercial vehicles are using the freeway and local street systems. Trucks often travel at the same time as commuters, creating competition for roadspace. Airports and seaports are also affected by gridlock, and their ability to serve travelers and shippers is degraded by poor transit and roadway connections.

This rapidly changing landscape makes it hard for those who plan and construct transportation to coordinate transportation infrastructure with development, especially given the long lead time necessary to plan, fund and construct transportation improvements. How to better link land use and transportation decisions is currently being debated in a number of regional forums and in the state Legislature. Cities that are caught in a revenue crunch have often opted for more office space as opposed to more housing. Concerned citizens have initiated growth control measures to rein in development to make the rate and type of growth more compatible with their views of a livable community. In addition, lack of adequate infrastructure such as water and sewer facilities place an effective limit to growth in various parts of the Bay Area.

An item of particular concern in the area of transportation/land use overlap is the supply of affordable housing located close to work sites. Much of the Bay Area's suburban job growth has occurred in areas with high housing prices, forcing workers with moderate incomes to look some distance away for affordable housing. This in turn has stimulated housing construction on the fringes of the region (in central and eastern Solano County and eastern Contra Costa County), as well as in small towns and cities of the Central Valley, south of Stockton and east of the Bay Area. An increasing number of workers are now faced with very long commutes from these new Central Valley bedroom communities to their jobs.

The shortfall in locally supplied affordable housing is projected to widen in the future. ABAG estimates that about one-third of the workers filling new jobs in the Bay Area over the next 15 years will need to find their housing outside the Bay Area itself. The Bay Area's inability to increase housing stock to adequate levels will thus exacerbate congestion, air pollution, and wasteful patterns of energy usage produced by the extraordinary commutes.

Due to the fragmentation of land use planning authority among the many cities and counties of the Bay Area, some observers have recommended greater regional authority in developing land use plans that would take into account costs and benefits on a regional or subregional basis. Such

authority could range from greater incentives for communities to plan cooperatively with their neighbors, to various forms of revenue-sharing on a regional or subregional basis, to a full-fledged regional government structure with the ability to make and enforce land use decisions.

Whatever the most appropriate form for making land use decisions, it must be recognized that most existing regional agencies in the Bay Area, including MTC, do not currently have the authority to engage in any type of land use decision-making. To a large extent, regional plans, including this one, are reactive documents that attempt to reflect land use policies of local government. A regional perspective on land use decisions will only come about as a product of voluntary actions on the part of local cities and counties, or through state legislative mandate.

Growth, Land Use, and Economic Issues:

- o Rapid growth in the last decade highlighted the need for new revenue sources to both maintain the existing infrastructure and finance capacity additions.
- o Employment has grown rapidly outside of traditional central business districts, changing the nature of Bay Area travel patterns.
- o Lack of affordable housing near areas where new jobs are being created leads to increasing numbers of workers who are commuting long distances.
- o Local governments compete amongst themselves for "desirable" growth (primarily high-tech employment and upper-income housing); however, mitigation of traffic impacts on regional transportation systems is not often an explicit consideration in local government land use decisions.
- o Regional governmental entities do not have the authority to coordinate local land use decisions with regional transportation needs.
- o Efficient movement of people and goods is necessary to ensure the continued prosperity of the Bay Area economy.

3. Air Quality

Automobile exhaust contains chemicals that are major contributors to smog and carbon monoxide levels in the Bay Area. New control strategies are being developed that will affect how and when travel is carried out in the region. New standards for automobile engines and fuels will substantially reduce vehicle emissions over time, but recent federal and state clean air legislation also call on regional transportation and air quality management agencies to consider implementing additional control strategies.

Air quality control strategies are designed to help achieve specific concentration levels for smog and carbon monoxide defined in the state and federal standards. While the Bay Area has been progressively cleaning up its air (two exceedances of the federal smog standard in 1989 and 14 of the state standard), the effects of added growth and trip-making must still be addressed. The state air quality standard for smog of 9 parts

per million will, in particular, be extremely difficult to attain and maintain over time. Along with these new pieces of legislation come additional requirements for demonstrating how regional transportation plans and programs are consistent with the objectives of the air quality plan. Further, under requirements of the Bay Area's adopted federal Clean Air Plan, MTC is also taking a closer look at how highway projects can best be designed to minimize adverse air quality impacts.

A number of transportation control measures (TCMs) have been investigated by MTC for the state-required Clean Air Plan due for adoption in mid-1991. They include mobility improvements in the form of expanded options for trips in modes other than the personal automobile, traffic operations management to smooth traffic flows, parking management, indirect source review for new and existing development, employer-based trip reduction programs, user incentives to reduce solo commuting, and pricing strategies. MTC and the Bay Area Air Quality Management District (BAAQMD) may have sufficient authority and funding to implement some of these measures at present; for others, additional legislative authority and/or funding would be needed. An enhanced vehicle smog check program, retirement of the oldest, most polluting cars, and expanded availability of "reformulated" auto fuels will also decrease air pollution, although implementing such measures is beyond the power of MTC or BAAQMD.

Issues:

- o Strict state and federal air quality standards require significant reductions in mobile-source emissions of pollutants.
- o As the number of vehicles in the Bay Area increases, new controls must be found to compensate for their added emissions.
- o Authority for addressing mobile source reductions is delegated among various agencies.
- o Proposed transportation control strategies must meet the test of public and legislative acceptability.
- o Due to the advent of cleaner cars and the difficulty in changing personal travel behavior, most transportation control measures are marginally effective in achieving significant reductions in smog-forming chemicals.
- o Attention must be given also to highway designs that mitigate adverse air quality impacts.
- o Public transportation providers need to look at low emission fuels for their buses.

4. Energy/"Greenhouse" Warming

Much of the nation's energy supply, particularly petroleum-based products such as gasoline, is used directly and indirectly in transportation. Energy consumption by vehicles in California has risen steadily throughout the 1980s, following a drop in the late 1970s. Energy supply and price influence how much people drive and the modes they choose for travel.

Plentiful, low cost gasoline has led to an increase in auto use and in a declining share of trips in the region being made on public transportation and in "shared ride" modes such as carpools and vanpools. Corporate Average Fleet Economy (CAFE) Standards placed on automobile manufacturers were, in fact, relaxed by the federal government in the last decade, spurring sales of higher horsepower cars.

A fuel-efficient transportation system for the Bay Area is desirable from a number of perspectives. Oil ultimately is a scarce and finite resource, hence conservation is essential to extend the lifetime of the world's petroleum supply. A second reason has to do with the need to reduce our dependence on foreign oil, a need which has been highlighted by the recurring instabilities in the Middle East. A final concern relates to the so-called "Greenhouse" warming of the atmosphere by carbon dioxide and other greenhouse gases. Carbon dioxide is by far the largest by-product of the engine's combustion process and has been linked to the heat-trapping phenomenon that is gradually warming the atmosphere. (Federal standards for auto emissions address smog and carbon monoxide, but carbon dioxide emission is essentially immune to removal from automobile exhaust.) Some suggest that this warming could significantly alter world climate and trigger a myriad of social and economic problems. While there is no consensus on this issue, it seems prudent to take steps to reduce greenhouse gases.

Issues:

- o Available energy at relatively low cost contributes to an increasing future travel demand.
- o New technology--including natural gas and electric cars that are low emitters of carbon dioxide--should be supported and renewable energy sources used where possible.
- o Traffic management strategies that reduce delay and wasted fuel are necessary.
- o Compact and mixed use development provides the opportunity to reduce and shorten vehicle trip-making.

5. Equity

Equity issues in a transportation context concern the need for convenient, safe, and affordable transportation for all residents. This means providing transportation that meets the needs of:

- persons who don't drive or do not have access to a car;
- persons with physical disabilities;
- the elderly;
- persons that come from a variety of cultures and speak a number of different languages.

In less developed parts of the Bay Area, equity issues revolve around the availability of transit within a community, and between neighboring communities. Of the two, the latter is the largest problem. Transit systems often stop at municipal boundaries and offer no connections to

other systems. Even when cross-system connections are available, these are often infrequent and inconvenient. The lack of an integrated transit network throughout the Bay Area is still a barrier to regional travel for individuals who cannot or choose not to drive.

A major milestone was achieved in recent federal legislation for people with disabilities. This legislation requires all public transit systems to purchase new fleet vehicles that allow full access to the system by persons with disabilities. Although implementation of the "paratransit" provisions of this legislation is expected to take several years, Bay Area transit operators are already taking steps to ensure full transit accessibility to physically disabled patrons. Even before the federal law, California has been in the forefront of accessibility issues. Since the 1970s, state law has mandated new buses be fully accessible to patrons in wheelchairs. Over the next few years, CalTrain will retrofit some of its rail cars to provide wheelchair accommodations. All Bay Area transit fleets are expected to be 100% accessible by the mid-1990s.

Accessibility to transportation services is also important to the growing number of elderly in the Bay Area. Historically, the elderly have constituted a major market for almost all transit operators and attention must be paid to ensure their transportation needs are met.

Also, the Bay Area traditionally has been home to people from a variety of national and cultural backgrounds. Many of these individuals rely on transit systems to get around. Transit operators in the Bay Area have become increasingly aware of special needs of people who are not yet fluent in the English language.

Issues:

- o There are significant barriers to mobility that need to be addressed such as:
 - physical barriers for persons with physical disabilities.
 - economic barriers for persons with low incomes.
 - language barriers for persons that do not understand English.
- o Demographics of the Bay Area population are changing, including a growing proportion of elderly residents.
- o Coordination and funding of "paratransit" services demand increasing attention.

6. Moving Forward

For any plan to succeed, it must ultimately reflect the desires and needs of the people for whom it is developed. This regional transportation plan can provide a framework within which future transportation decisions are made.

As the discussion in this section indicates, a variety of issues must be considered by all Bay Area jurisdictions involved in planning and operating transportation systems. For some of these, the local level is the appropriate forum for action; other issues will benefit from being

approached at a regional, state, or national level. Strategies for tackling transportation problems are heavily influenced by the institutional framework within which MTC operates. This framework is discussed in the next section.

CHAPTER II:
INSTITUTIONS AND PROGRAM LINKAGES



CHAPTER II: INSTITUTIONS AND PROGRAM LINKAGES

The numerous issues outlined in Chapter One have generated a rush of responses from government and private sector institutions at all levels. The resulting inventory of new programs, regulations, or policy positions have, at turns, enhanced or constrained MTC's capacity to respond to the Bay Area's transportation problems.

A. METROPOLITAN TRANSPORTATION COMMISSION

The Commission itself is, of course, the central actor in Bay Area regional transportation planning. Established in 1970 by the California State Legislature, the MTC is composed of 19 members: 14 representing the nine Bay Area counties and cities (two each from Alameda, Contra Costa, San Francisco, San Mateo and Santa Clara counties; one each from Marin, Napa, Solano and Sonoma counties), and one representative each from the Association of Bay Area Governments, the San Francisco Bay Conservation and Development Commission, the State Secretary for Business and Transportation, the United States Department of Housing and Urban Development, and the United States Department of Transportation (the latter three are non-voting members).

MTC's enabling legislation assigns it four broad responsibilities:

- o the development and implementation of the Regional Transportation Plan;
- o the development of regional transit service and productivity objectives;
- o establishment of regional priorities for the allocation of funds, for both the transit and highway programs;
- o review and approval of projects for federal and state grants.

In carrying out its mandate, MTC has expanded beyond transportation planning, programming and monitoring to offer direct technical assistance to its constituent cities, counties, and transit agencies. Among its various assistance projects, the Commission has established a Regional Transit Connection clearinghouse for the sale and marketing of transit tickets; engineered a Pavement Management System for the maintenance of local streets and roads, and been designated as the Service Authority for Freeways and Expressways (SAFE), which oversees the installation and operation of call boxes along Bay Area freeways.

Aside from the SAFE program, however, MTC does not own or operate any portion of the transportation system. Carrying out the goals and objectives of its long-range plans and programs, therefore, requires a close partnership with other institutions. The ever changing roles of these other actors significantly influences the Commission's priorities and actions, as demonstrated in the remainder of this chapter.

B. CITIES AND COUNTIES: NEW ROLES

Since 1987, cities and counties have assumed a much more visible role in transportation planning, and taken on new planning and programming responsibilities. Three of the more significant programs were established through state legislation.

1. Countywide Transportation Plans

Assembly Bill 3705, passed in 1988, established countywide transportation plans. While not mandatory, these plans may be prepared by Bay Area counties for integration into the Regional Transportation Plan, thereby coordinating the planning objectives and responsibilities of cities, counties, and the regional planning agency. Pursuant to AB 3705, the county transportation plans shall be the primary basis for the RTP, and the countywide plans shall consider the most recent RTP adopted by the Commission. These plans are to include recommendations for arterial, public transit and state highway improvements; transportation system management alternatives; and consideration of transportation impacts associated with projected future growth and land-use development decisions.

This legislation required MTC to prepare guidelines for the preparation of countywide plans. The Commission adopted these guidelines on December 20, 1989 as Resolution No. 2120.

2. Congestion Management Programs

Before many Bay Area counties could mobilize the support and resources to develop countywide transportation plans, mandatory county-level Congestion Management Programs (CMPs) were enacted with the passage of the state gas tax increase on June 5, 1990. The CMPs themselves were the product of the "Katz-Kopp-Baker-Campbell Transportation Blueprint for the 21st Century" [Statutes of 1989], which made sweeping changes to transportation planning and programming in California (see discussion below). While both the CMPs and countywide transportation plans intended to generate a more systematic, multi-modal approach to transportation planning, the CMPs differ from the countywide plans in some significant ways.

They are mandatory, as opposed to voluntary, and are much more prescriptive in dictating how improved mobility is to be achieved. Congestion relief is predicated on the achievement and maintenance of traffic "level of service standards" (LOS)--that is, measures of traffic conditions from LOS "A" (free-flowing) to LOS "F" (gridlock). Traffic LOS standards comprise one of the required elements of the plan. Other required elements include

- o transit performance standards for service frequency and routing, and coordination among different transit agencies;
- o a transportation demand and trip reduction element, comprised of strategies to reduce single-occupant driving and encourage transit use or carpooling;
- o a land-use impact analysis program, designed to evaluate the impacts of new land developments on the transportation system's performance; and
- o a capital improvement program--the list of specific projects designed to achieve or maintain the traffic and transit standards established above.

To assist Bay Area counties and cities in meeting these requirements, MTC adopted Resolution No. 2166, the Regional Congestion Management Program Policy, in June, 1990.

The mandatory nature of the CMP is underscored by certain limitations and sanctions. Projects for certain state funds must come from adopted

Congestion Management Programs, therefore local jurisdictions that seek major state assistance for highways and rail transit must comply with CMP requirements. As well, cities and counties must comply with requirements to receive a portion of local subvention funds (revenues allocated to local jurisdictions by formula for specific transportation purposes).

3. Sales Tax Expenditure Plans

Different pieces of legislation have enabled counties in California to enact an incremental sales tax for transportation purposes. Sales taxes can be increased up to a total of 7%, and must be passed by a majority of the county voters. The incremental revenue is to be spent on transportation improvements outlined in a sales tax expenditure plan, and the expenditures are to be administered by a designated sales tax authority. To date, Alameda, Contra Costa, San Francisco, San Mateo, and Santa Clara counties have all passed county sales tax measures.

Both the countywide plans and Congestion Management Programs are noteworthy because certain responsibilities to analyze and mitigate transportation problems are shifted from regional to local entities. In the case of the transportation sales tax authorities, counties can now directly finance significant improvements to the regional transportation system. Although both the development and implementation of these efforts require the cooperation of the county and its included cities, issues that cross county boundaries are not well addressed, and are left to MTC to reconcile. The focus on county transportation may be effective in dealing with some issues, but less effective in dealing with regionwide transportation, land-use and air quality concerns.

C. AIR QUALITY POLICIES: SIGNIFICANT IMPACTS

The passage of the California Clean Air Act in 1988 and the federal Clean Air Act Amendments in 1990 will have a powerful influence on transportation planning and development in the next decade. The impact of automobile emissions on regional air quality goals must now be an explicit consideration in formulating any transportation plan or program.

1. California Clean Air Act: MTC Transportation Control Measure Plan

The California Clean Air Act, authored by Assemblyman Sher, sets stringent standards for air pollutants and requires non-attainment areas in the state to reduce harmful pollutants by 5% or more per year, averaged every three years, and to meet standards as expeditiously as possible. Air districts must adopt a plan demonstrating how they will meet these goals by June, 1991. In the Bay Area, legislation by Assemblyman Cortese set out a role for MTC to develop the mobile source portion of this clean air plan, known as the Transportation Control Measure (TCM) Plan.

The proposed State TCM Plan has three major components:

- o Reasonably Available TCMs - These are transportation control measures that can be implemented with existing sources of funding and authority.

- o A Mobility Package - This component calls for development of additional mobility options, which would divert travel from the single occupant automobile to walking, biking, carpooling and transit. Implementation, however, would require state legislation to provide additional revenues for this program. Revenues would be set at a level sufficient to fund the mobility improvements.
- o A Contingency Plan - This component would only be implemented if emissions reductions from the Mobility Package are insufficient to meet state air quality standards. Additional legislative authority would be needed to implement smog and congestion fees designed to substantially reduce automobile trips and vehicle miles travelled through pricing means. The costs to drivers would be set at levels to discourage driving to the extent required to meet the standards.

As will be seen in the RTP Action and Financial Elements, the proposed Transportation Control Measures will significantly impact the region's long range transportation strategy. MTC's TCM Plan has been submitted to the Air District and will likely be refined as further public input is received. Under state law, the air districts were given ultimate responsibility for implementation and enforcement of Transportation Control Measures. Consequently, a new cooperative partnership is being forged between the Bay Area Air Quality Management District and MTC.

2. Federal Clean Air Act

Federal clean air plan requirements affect MTC's planning and programming activities in a number of ways. Litigation brought against the agency in 1989 alleged that MTC had not fully complied with the 1977 Federal Clean Air Act and the process to meet those standards outlined in the 1982 Bay Area Air Quality Plan. During the pendency of this litigation, MTC took several actions, including

- o developing a more stringent process for determining the "conformity" of the 5-year Transportation Improvement Program and the Regional Transportation Plan with the 1982 Bay Area Air Quality Plan, and analyzing air quality impacts of highway projects (MTC Resolution No. 2270, 1990);
- o adopting additional transportation control measures (MTC Resolution No. 2131, 1990);
- o revising the process for determining "conformity" between the federal Transportation Improvement Program and the Bay Area Air Quality Plan.

While MTC was responding to litigation brought over compliance with the federal Clean Air Act, Congress was revising it. In November 1990, Congress passed and the President signed the 1990 Clean Air Act Amendments. For most parts of the country, this Act significantly tightened tailpipe and other direct source controls for automobiles, bringing the nation closer to the standards already imposed in California. In addition, it set in motion new timetables and requirements for federal clean air plans and assessments of how well transportation plans and programs stack up against vehicular emission reductions spelled out in the air quality plans. New federal air quality conformity procedures are now being drafted in response to the 1990 Federal Clean Air Act Amendments, covering the period while these new plans are being developed.

D. ASSOCIATION OF BAY AREA GOVERNMENTS

The Association of Bay Area Governments (ABAG) develops population and employment forecasts for every city and county in the Bay Area; these forecasts are updated every two to three years. The most recent set of forecasts, Projections 90, provides estimates of the number of jobs and workers for 1995, 2000 and 2005. These forecasts provide the basis for MTC's transportation plans, including the Regional Transportation Plan.

In addition to developing its detailed set of projections, ABAG also serves as the regional land-use planning agency for the Bay Area. The plans and projects developed and promoted by ABAG are advisory only; it has no authority to mandate adoption of its plans. By assessing the implications of growth throughout the region, however, ABAG performs a vital role that is not currently replicated by either the state or the various local governments in the Bay Area. A valuable example of ABAG's efforts in this regard is its periodic housing needs determination for the region. As required by state law, ABAG estimates future housing needs by income categories, and allocates these needs to each city and county in the region to offset the demands of current and projected employment growth.

E. SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION: THE BAY PLAN

In January 1969, the San Francisco Bay Conservation and Development Commission (BCDC) adopted the Bay Plan, a comprehensive set of policies, guidelines and site plans designed to preserve, protect and enhance the San Francisco Bay and its environs. A principal component of the Plan is a set of transportation policies that indicates under what circumstances transportation facilities and services are allowable uses of the Bay shoreline, waters and wetlands. Modification of these policies over time has involved MTC directly. The most recent modification to the Plan's transportation policies (Amendment No 2-89) was influenced by information provided by MTC. Specifically, MTC provided BCDC with an inventory of proposed highways and bridges that, if implemented, could have potentially serious consequences for the Bay, its marshes, wetlands and habitats. Also, in developing the regional airport and seaport plans, MTC considers the protection of the Bay a vital regional interest; recommendations made in the regional airport and seaport plans are coordinated with the Bay Plan. MTC's concern for the Bay and its environment will continue to be a cornerstone of its planning and policy formulation.

F. STATE TRANSPORTATION PLANNING: A LEGISLATIVE OVERHAUL

Since its inception in 1970, MTC has worked closely with its transportation partners at the state level. MTC and Caltrans share a number of joint interests, largely in the area of planning and programming future highway improvements, and with maintenance of the existing system. The task of programming state highway funds has been a focal point of discussions between regional transportation agencies throughout California and Caltrans.

State transportation planning and programming were dramatically changed with the passage of the "Katz-Kopp-Baker-Campbell Transportation Blueprint for the 21st Century," a combined package of legislation passed in 1989. Key features of the legislation included:

- o \$18.5 billion of new revenues for transportation through 1999 due to voter passage in June 1990 of a nine-cent-per-gallon increase in fuel taxes and increase in truck weight fees, including ballot measures for \$3 billion in commuter and urban rail transit bonds (The first \$1 billion of the bonds was also approved by voters in June, 1990).
- o Establishment of nine new transportation funding programs, and extension of the time period covered by the regional and state Transportation Improvement Programs (RTIP and STIP respectively) from five to seven years.
- o Significant changes to the state transportation planning and programming process, including the establishment of the Congestion Management Program (as discussed in II.A above). Among other things, the changes more clearly differentiated the responsibilities of Caltrans and regional transportation planning agencies in the area of state transportation planning.

New sources of financing were sorely needed, as the state would have been unable to finance the balance of highway projects in the 1988 STIP if new gas tax revenues had not been approved by the voters in June, 1990. Certain transportation funding gaps, however, must still be addressed. Transit operations received some additional funding through the Blueprint package, even though many services throughout the state continue to be curtailed due to lack of operating revenue. In general, 48 percent of the new gas tax revenues will go to highway and roadway projects, with 19 percent targeted primarily to rail capital and 33 percent devoted to local projects to implement TSM programs and relieve congestion.

In addition to the funding package described above, voters in June, 1990 also approved \$1.99 billion in bonds, primarily for funding rail projects throughout the state.

G. NEW FEDERAL TRANSPORTATION POLICIES

The 1990s will be a major turning point in federal transportation policy. Several significant steps have been or will be taken under the Bush Administration.

1. National Transportation Policy

In February 1990, the U.S. Department of Transportation released "Moving America: New Direction, New Opportunities," its statement of national transportation policy and action strategies. Among other things, the national policy sets out a framework for federal involvement, such that "the federal government should focus its attention on compelling national interests that government participation should advance." Federal programs and policies should be

- o designed to contribute to attaining national goals;
- o based on cost-effective use of resources in relation to public benefits;
- o responsive to market needs and based on market principles;
- o directed at accounting for effects such as safety or environment that are not adequately reflected in prices in the marketplace;

- o equitable in dealing with the various modes and forms of transportation;
- o flexible enough to address varying circumstances and needs.

2. Surface Transportation Act Reauthorization

The real challenge is putting these principles into practice, and the first test will be the reauthorization of the federal Surface Transportation Act. This act defines all federal funding programs for highway and transit. The reauthorization provides a once-in-a-generation opportunity to redefine priorities for federal investment in rural and urban systems. It is doubly significant because of the completion of the Interstate highway system, which will free up monies for other transportation needs. MTC and other regional transportation planning agencies are advocating increased flexibility--that is, breaking away from the rigid, mileage-based formulae criteria that characterized former Interstate and other Federal Aid programs. The multi-modal Metropolitan Transportation System (MTS), the focus of this Regional Transportation Plan, lays a planning foundation for such advocacy. The MTS illustrates how urban congestion problems can best be addressed by a balanced investment among freeways, arterials and transit systems. It is unclear, however, what shape the new reauthorization will take. Committees in both the House and the Senate will be debating final reauthorization proposals in the spring of 1991, with final action by Congress expected by September.

3. Americans with Disabilities Act

In 1990, Congress passed and President Bush approved important federal legislation dealing with the mobility concerns of the physically disabled. The Americans with Disabilities Act (ADA) contains significant provisions affecting employment, public accommodations, and telecommunications as well as transportation. ADA's impacts on the industry are most keenly felt in the area of public and private transportation (transit and paratransit) providers. In general, public fixed-route systems must ensure that all new purchases or leases of vehicles are accessible to all patrons; they will also be required to provide comparable "complimentary" paratransit services. General public demand-responsive systems must be accessible to all disabled persons, including those in wheelchairs. Rail systems must have at least one accessible car per train, and key commuter, light rail and heavy rail stations must also be accessible.

H. PRIVATE SECTOR

In recent years, concern for transportation financing and a political emphasis on supporting private-sector activities has resulted in new initiatives to involve the private sector in responding to transportation problems. Two examples illustrate such involvement.

1. Toll Road Initiatives

The possibility of project level involvement by the private sector was illustrated through Caltrans' approval in 1990 of a package of four privately built toll roads. One of the proposed projects, the "Mid-State Tollway" would extend from Sunol in eastern Alameda County to Vacaville in Solano County, providing an alternate route to the heavily traveled

Interstate 80 and 680 corridors for trucks and autos that would be willing to pay the toll. The road would be privately financed and operated. Although such projects are being heralded as "historic" public-private partnerships, a number of questions must still be addressed concerning their viability.

2. UMTA Privatization Policy

In late 1984, the federal Urban Mass Transportation Administration (UMTA) issued a notice of its policy to promote greater reliance on the private sector in providing public transit services. The federal interest spanned both the actual provision of bus services, as well as transit maintenance and capital procurement opportunities. Responding to more formal guidance issued by UMTA requiring documentation of private sector participation, MTC adopted Resolution No. 1591 (1986), which sets forth MTC's regional privatization policy. The policy focuses on

- o involving the private sector in transit planning and programming;
- o facilitating communication between and providing technical assistance for public and private transit providers; and
- o establishing a process for reviewing complaints with regard to violations of MTC policy.

To support its role as the region's "private sector policy coordinator," MTC developed a Private Sector Provider Database that provides valuable information to the region's numerous transit operators on private sector interests and capabilities.

I. CHALLENGE TO THE REGION

Given the rapidly changing roles of MTC's partners in transportation, it is imperative that MTC

- o clearly communicate its unique interests and responsibilities;
- o establish specific goals and objectives for carrying out those responsibilities; and
- o develop and implement an action plan for achieving those objectives.

The remainder of the Regional Transportation Plan outlines MTC's policy and strategic approach to this changing environment.

CHAPTER III:
POLICY ELEMENT



This section describes the goals, objectives and strategies that provide the policy framework for the regional transportation improvements outlined in the Action Element. The goals have evolved from the problems identified in the "Key Issues" section, and the constraints and opportunities discussed in "Institutions and Program Linkages." Specific objectives and strategies are identified for implementing each goal. Major goals are:

- o Providing Mobility
- o Promoting System Equity
- o Enhancing Sensitivity to the Environment
- o Supporting Economic Vitality

A. MOBILITY

This goal recognizes that the ability to move with a reasonable degree of ease and predictability throughout the Bay Area is an important element in maintaining the quality of life for Bay Area residents.

Objective 1: Improve the person-carrying capacity of the transportation system.

Strategies:

- o Increase capacity by adding to the system.
- o Improve utilization of the existing system.

Objective 2: Improve system convenience, efficiency, and safety.

Strategies:

- o Provide coordination among different systems.
- o Improve system reliability and efficiency.
- o Improve system safety.

B. SYSTEM EQUITY

This goal recognizes the importance of equitable access of all persons to the region's transportation systems.

Objective 1: Provide for an equitable decision-making process.

Strategy:

- o Provide an opportunity for broad participation in the development of the transportation system.

Objective 2: Support equitable distribution of costs and benefits of the transportation system.

Strategies:

- o Support flexible funding that permits the equitable distribution of benefits of transportation investments.
- o Support revenues for transportation purposes that relate to the costs of services provided.

Objective 3: Provide for mobility needs of the transportation disadvantaged.

Strategies:

- o Support transportation programs that provide mobility for low-income persons.
- o Support transportation programs that provide mobility for mobility-impaired persons.

C. SENSITIVITY TO THE ENVIRONMENT

This goal recognizes the need to fully analyze and understand the environmental impacts, both short- and long-term, of transportation decisions, and to mitigate adverse impacts whenever possible.

Objective 1: Promote a transportation system that supports a healthful environment.

Strategy:

- o Use the Regional Transportation Plan (RTP) to define a transportation system that limits the consumption of scarce resources, reduces air pollution, and is aesthetically pleasing.

Objective 2: Minimize - by avoidance or mitigation - potential adverse impacts of transportation systems and projects.

Strategy:

- o Develop and support transportation plans and projects that minimize adverse impacts on the environment.

D. ECONOMIC VITALITY

This goal recognizes the relationships between the productivity of an individual and the ability to travel, and between the regional economy and the effectiveness of the transportation infrastructure.

Objective 1: Support the local and regional economy by improving the performance of a Metropolitan Transportation System (MTS).

Strategies:

- o Demonstrate the linkage of transportation infrastructure and economic health.
- o Ensure vitality of urban cores by making critical infrastructure improvements.
- o Develop a transportation system that meets local and regional economic needs.

Objective 2: Support national and regional economic linkages by improving system performance and reducing congestion on the Interstate system, intercity rail and California Corridor air service.

Strategies:

- o Develop intergovernmental planning and advocacy partnerships to improve system performance on key interregional corridors.
- o Encourage development of an intercity rail plan for California.
- o Improve system performance of Interstate and other freeways in the Bay Area by making improvements to parallel MTS routes.

Objective 3: Maintain the international competitiveness of the Bay region by investing in the region's international airports, seaports and related transportation infrastructure.

Strategies:

- o Coordinate development plans of the three international airports to ensure that the Bay Area remains a Pacific Rim gateway.
- o Ensure access to the region's airports and seaports.

The goals, objectives, and strategies outlined above provide guidance for the development of a specific plan of action to meet the transportation needs of the Bay Area into the next century. The Action Element identifies specific plans and projects and relates them to the policies discussed in this section.



CHAPTER IV:
ACTION ELEMENT

- A. DESCRIPTION AND PURPOSE OF THE METROPOLITAN TRANSPORTATION SYSTEM (MTS)**
- B. CRITERIA AND COMPONENTS OF MTS**
- C. MTS VERSUS FUNDING CATEGORIES**



A. DESCRIPTION AND PURPOSE OF THE METROPOLITAN TRANSPORTATION SYSTEM (MTS)

The Metropolitan Transportation System (MTS) is the centerpiece of MTC's Regional Transportation Plan Action Element. It defines a multimodal system of regional significance--that is, those facilities and services that are crucial to the mobility needs of the nine-county Bay Area Region. In defining this regional system, the Commission seeks to answer the following questions:

- o MTS Definition: How should MTC define the existing Metropolitan System?
 - What types of travel are included?
 - What are basic system components?
 - o transit
 - o highways
 - o arterials
 - How do they work together?
 - What's missing?
- o Problem Identification: What are current system deficiencies?
 - inadequate capacity
 - gaps/connectivity
 - operational problems
 - age, deterioration
 - safety
- o Action Plan: What are the proposed solutions to correct these deficiencies?
 - operational improvements
 - capital improvements
- o Finance Plan: How do we bring about the recommended solutions?
 - What are most cost-effective solutions?
 - What are available and future funding sources?
 - What institutional/funding program changes are necessary to deliver improvements?

MTC is charged with planning for and advancing regional mobility. But the complex environment in which the Commission works, illustrated in Chapters I and II, demands a new way of thinking--a new discipline for defining transportation needs and creating solutions to remedy those needs. Transportation planning and financing must occur within the larger context of air quality and environmental goals, growth and land-use changes, energy consumption impacts, and equity concerns.

MTC has therefore developed the following key principles to guide our thinking in the development of the Metropolitan Transportation System:

1. The MTS must function as a multimodal, integrated system, and address both passenger and freight mobility needs.
2. Decisions to maintain and enhance the MTS must seek to balance mobility with environmental, equity, and economic objectives.
3. The MTS is designed primarily to serve interregional trips and intraregional trips between major activity centers within the region, and all trips to major activity centers.
4. Maintenance, rehabilitation, and safety of the existing system must be assured.
5. Operational improvement decisions must be integrated with capital improvement decisions.
6. Flexible funding is essential to developing and maintaining a system that achieves the above principles.

B. CRITERIA AND COMPONENTS OF MTS

1. Redefining "Regional"

The central concept of the Metropolitan Transportation System demands a new definition of "regional" travel. As commonly defined, regional transportation has assumed a limiting, geographic connotation--i.e., to be "regional," a trip must be relatively long and cross specific boundaries, such as county or city lines. The Metropolitan Transportation System, however, hinges on a functional as opposed to a purely geographic definition of regional travel. For the MTS, a facility is considered important if it permits access to any activities crucial to the social or economic health of the Bay Area; such facilities may be located wholly within one jurisdiction.

This definition recognizes the Bay Area as a single, integrated, unique economic and social unit--not simply the disjointed aggregation of separate cities and counties. Therefore, those trips that weave parts of the Bay Area together by crossing county or city lines are critical to the MTS concept. In addition to these trips, any trip that accesses major Bay Area activity centers, regardless of the trip's length or origin, is also important to the region as a whole.

2. MTS Criteria and Components

To identify component facilities and services that capture this broadly defined regional transportation system, specific functional criteria have been identified. The MTS consists of an integrated system of streets and highways, transit facilities and services, and critical transfer points. All components of the MTS contribute to optimal performance of the system--the highway, transit, and transfer facilities are all critical. It is crucial, therefore, to understand how each MTS component functions in order to correctly pinpoint system deficiencies, and develop proper solutions to address those deficiencies. The following system criteria delineate these important functions.

o CRITERIA: MTS ARTERIAL STREET AND HIGHWAY SYSTEM

- 1) Serves a major Bay Area activity center
 - A major activity center is a development that generally attracts trips from many areas of the region and/or outside the region, in addition to attracting significant local trips. Major activity centers include regional employment centers, regional business and financial centers, regional sporting and entertainment facilities, regional retail centers, major universities or colleges, major government facilities (e.g., prisons, military facilities), regional medical facilities, regional commercial centers, major recreational centers, and regional cultural attractions. In urban counties there may be dozens of activity centers, though in suburban and rural counties there are probably fewer.
 - A highway, or arterial is considered to serve a development if it is within 1 mile of the activity center.
- 2) Provides important intercounty and/or interregional connections
 - highways and arterials needed to provide connections between adjacent MTC counties or counties bordering the MTC region
- 3) Serves as a reliever for a freeway
 - arterials in freeway corridors that could reasonably serve longer local trips that might otherwise be attracted to the freeway
- 4) Provides important connections in the MTS street and highway system
 - highways that connect other highways
 - arterials that connect highways
 - arterials that connect regional arterials to the highway system
 - arterials that provide important connections within the regional arterial system
- 5) Serves as a major crosstown arterial for relieving congestion
 - arterials that serve significant intracity travel
- 6) Provides major access to airports/seaports
 - highways and arterials that connect to major airports and seaports
- 7) Provides access to regional transit transfer facilities
 - highways and arterials that provide access to major transit transfer facilities, including rail stations and intercity bus transfer facilities
- 8) Serves as an important goods movement route
 - highways and arterials that are important to goods movement from outside the Bay Area to this region, and distribution throughout

different areas of the region, as opposed to only serving local delivery needs

o CRITERIA: MTS TRANSIT SYSTEM - RAIL, BUS, FERRY

1) Serves a major Bay Area activity center

- A major activity center is a development that generally attracts trips from many areas of the region and/or outside the region in addition to a significant number of local trips. Major activity centers include regional employment centers, regional business and finance centers, regional sporting and entertainment facilities, regional retail centers, major universities or colleges, major government facilities (e.g., prisons, military facilities), regional medical facilities, regional commercial centers, major recreational centers, and regional cultural attractions. In urban counties there may be dozens of activity centers, though in suburban and rural counties there are probably fewer.
- A transit route is considered to serve an activity center if it is within .25 mile of the center.

2) Provides important intercounty and/or interregional connections

- routes needed to provide connections between adjacent MTC counties or counties bordering the MTC region

3) Serves as a reliever for a freeway or rail service

- transit routes in freeway or rail corridors that provide additional capacity for overburdened freeways or rail service

4) Provides important connections between the various elements and operating entities of the regional transit system

- routes that serve "Regional Transit Connection" points, and other significant transit transfer facilities

5) Serves a high-volume transportation corridor

- provides frequent service along freeway or MTS arterial corridors, or other corridors of significant traffic movements

o CRITERIA: MTS TRANSFER POINTS

- 1) Provides for significant intermodal transfers between components of MTS (e.g. car to rail, bus to rail (key points), bus to ferry, car to ferry)

- 2) Provides for high-volume transfers between or within transit systems of MTS
 - for rail station transfer points:
 - is a rail terminus, and/or
 - provides high volume connections with other rail lines, and/or
 - provides rail transfers with multiple bus operators, particularly those that provide intercounty connections, and/or
 - provides significant, high volume transfers with a single bus operator, or multiple operators
 - for bus only transfer points:
 - provides multiple bus operator transfers, and/or
 - provides for coordinated (e.g., timed transfer), high-volume intraoperator connections among multiple lines
- 3) Provides for transfers to special modes such as air, ship, and freight or intercity passenger rail

NOTE: There are also numerous park-and-ride lots served by single bus operators throughout the Bay Area that do not provide the volume of transfers and do not serve multiple operator transfers characteristic of other identified regional transfer points. However, they do provide an important support base for transit agency operations, and are discussed further in Section IV.D.9.b of the RTP, "Transit Service Coordination."

The subarea analyses beginning with Section IV.D.2 contain maps of the MTS street and highway and transit systems, and list MTS transfer points by subarea.

C. MTS VERSUS FUNDING CATEGORIES

The MTS is designed to focus MTC's transportation planning decisions--to identify the nature and location of travel on the defined system, analyze the performance of that travel network and pinpoint system deficiencies, and develop remedies for those deficiencies. Any proposed transportation improvement that maintains or enhances the performance of the Metropolitan Transportation System, whether located directly on or off the system, would be a prime candidate for investment. Therefore, the MTS itself is not constrained by current funding "categories," or funding eligibility criteria.

Currently, rigid funding categories are a hindrance to solving problems in this region. To the extent that the MTS concept can be used to illustrate the need for more "flexible" funding, as in current discussions over the Federal Surface Transportation Act Reauthorization, it will be used in this manner.

However, it is clear that even though the MTS would direct the Commission to address deficiencies in order to improve the performance of the Metropolitan Transportation System, there will be insufficient funding available to satisfactorily address all the problems. Trade-offs among investment choices are inevitable, as major federal and state revenues fall far short of needs.

Nonetheless, the systematic identification and evaluation of system deficiencies should permit the Commission to prioritize investments in a manner that provides cost-effective solutions within funding constraints.

Funding "Non"-MTS Facilities and Services. A facility or service not designated as part of the MTS is identified as serving primarily local travel. Planning and operational decisions concerning these types of facilities or services have generally been carried out by cities, counties, and (in the case of transit) transit districts, with little direct influence or direction from MTC.

The Commission recognizes, however, that these local facilities and services contribute to overall mobility, and that sufficient, locally controlled resources are needed to underwrite their maintenance and development. MTC continues to advocate for sources of revenue that will be used for overall transit operations and the maintenance and improvement of local streets and roads.

CHAPTER IV:

ACTION ELEMENT

D. MTS ANALYSIS AND RECOMMENDATIONS

- 1. Introduction and Regional Overview**
- 2. MTS System Analysis: Eastern Subarea**
- 3. MTS System Analysis: Western Subarea**
- 4. MTS System Analysis: Northern Subarea**
- 5. MTS System Analysis: Southern Subarea**
- 6. MTS Future Improvement Options for 2010**
- 7. MTS Arterials**
- 8. Streets and Highways: Related Programs**
- 9. Transit System/Transfer Points: Related Programs**
- 10. Traffic Mitigation/Ridesharing for Commuters**
- 11. Bicycles**
- 12. Airports, Seaports and Freight Transport**



D. MTS ANALYSIS AND RECOMMENDATIONS

1. Introduction and Regional Overview

Chapter IV, Sections A through C, defined the Metropolitan Transportation System (MTS) and its relationship to MTC's overall planning efforts. Section IV.D highlights the system analysis of the MTS, and suggests a process for selecting future improvements that will comprise the core recommendations for this and subsequent Regional Transportation Plan (RTP) Action Elements.

This portion of the Action Element is structured as follows:

- o IV.D.2 through D.5 presents the systems of streets/highways and transit that make up the MTS. The first four parts address highway and transit on a subarea basis to permit a more in-depth examination of the existing transportation systems.

The subareas divide the region into roughly four quadrants, as follows:

- Eastern: Alameda, Contra Costa, and Solano counties
- Western: San Mateo and San Francisco counties
- Northern: Marin, Sonoma, and Napa counties
- Southern: Santa Clara County

Each subarea description outlines characteristics of the subarea, pertinent demographic changes for the 1990 to 2010 period of the RTP, and a description of the current freeway/highway and transit systems.

- o Section IV.D.6 presents recommended actions to address transportation deficiencies that would likely occur if no improvements were made to the existing MTS. The background analysis of these estimated deficiencies, and the suggested process for evaluating and selecting improvements to address them, are presented as part of this introduction: "*a. The Regional Overview: A Look at 2010*" and "*b. Identifying Future MTS Improvements.*"
- o Following the subarea descriptions and discussions of future highway and transit options are a series of evaluations and recommendations for special transportation projects or programs (Sections IV.D.7 through D.12). Each discussion outlines the current description, identified deficiencies, and recommended actions related to the following subjects:
 - arterials
 - street- and highway-related programs
 - transit- and transfer point-related programs
 - transportation systems management
 - bicycles
 - airport, seaports and freight transport
- o In constructing the Action Element, particular attention was given to recommendations arising from MTC's work in the air quality arena. The 1982 *Bay Area Air Quality Plan* contained 12 Transportation Control Measures (TCMs) to reduce emissions from mobile sources; the

Commission augmented this list in February 1990 to add 16 new TCMs to address a shortfall in emissions from the original set of measures (MTC Resolution No. 2131). Also, MTC was assigned the task of developing new TCMs to meet the more stringent state ozone standards and provide this list to the Air District as part of the region's *Clean Air Plan*. This plan will be finalized and adopted by the Air District in mid-1991 after public review and comments. Appendix A-V provides more information on the status of these air quality planning efforts.

Because the TCMs directly impact transportation planning and programming, references to specific measures are made throughout Section IV.D. as well as Section IV.E. and Chapter V, "Financial Element."

a. The Regional Overview: A Look at 2010

To put the RTP Action Element into perspective, it is important to envision the transportation setting the Bay Area could likely face in the year 2010. The Regional Transportation Plan Environmental Impact Report (RTP EIR) provides valuable information regarding the forecast socio-economic conditions and resulting transportation impacts that will influence the direction of future transportation decisions.

A critical projection is that the region will grow by an additional million residents between 1990 and 2010. This information is based on research by the Association of Bay Area Governments (ABAG), contained in its report Projections 1990. A comparison of 1990 and 2010 jobs, population, and workers are as follows (figures in millions):

	<u>Jobs</u>	<u>Population</u>	<u>Workers</u>
1990	3.048	5.951	3.163
2010	4.088	7.011	3.868
Difference	1.040	1.060	.705
% Diff.	34%	18%	22%

This growth brings with it a commensurate surge in travel, as the population living in and commuting to the Bay Area in 2010 travels to jobs, schools and other activities. The RTP EIR examined four distinct 2010 transportation networks to evaluate their capacity to handle this demand:

- o The "No Project Alternative," which basically adds no new or improved facilities to the existing Bay Area transportation network;
- o the "Highway Capacity Alternative," which expands the Bay Area highway network to its feasible limit for the year 2010, but adds only a small amount of new transit capacity;

- o the "Transit Capacity Alternative," which adds no new highway projects beyond the 1990 baseline, but directs all future new investments to rail, bus, and ferry expansion; and
- o the "Transit/Highway Blend Alternative," defined as the EIR Project, which balances investments in highways, bus and rail transit, ferries and arterials to address transportation demand in the year 2010.

The "No Project Alternative" provides a valuable backdrop for evaluating the benefits and costs of future transportation improvement options. Essentially, the "No Project" scenario depicts how the Metropolitan Transportation System would perform if no capital or operating investments were made between 1990 and 2010. The RTP EIR findings suggest that Bay Area mobility would be significantly impaired if this were the case, as described below and summarized in Table IV-1.

- o As a result of projected regional growth, the number of Vehicle Trips (single occupant auto) in 2010 will increase over 1990 levels by approximately 24%. Likewise Vehicle Miles Traveled (VMT) will increase roughly 19% over current levels, reflecting the overall population's need to move.

However, more people are also expected to ride transit. As shown in Table IV-1, even if no further improvements to transit were made by the year 2010, there would be a 29% increase in transit trips over current levels.

- o The consequence of such growth, however, would be a significantly less efficient transportation system, as demonstrated by five performance indicators:
 - Speed, measured in miles per hour (mph), is the most direct indication of level of service for the highway system; i.e., the faster you are able to travel, the better the system is serving your travel needs. Without any improvements, average morning peak period speed on the region's freeways, expressways, and major arterials would drop from 1990 levels of 21 mph to 19 mph in 2010.
 - Vehicle Hours of Travel (VHT) reflects both vehicle miles traveled, and the speed at which one travels. An increased number for VHT would indicate a greater "vehicle presence" on the roadway. Vehicle hours of travel in the No Project scenario increases 39 percent over 1990 levels.
 - Vehicle Hours of Delay (VHD) is the difference between estimated vehicle hours traveled on the future system and the vehicle hours traveled if the system were operating at optimal, free-flow conditions (i.e., with no traffic congestion). Future delay would increase over 1990 levels by 72 percent if nothing is done to enhance the system.

- Freeway Congestion is measured by the number of miles of freeway operating at 30 miles per hour or less during the peak commute period. Congested miles during the morning peak will increase significantly (22%) between 1990 and 2010 if no improvements are made.
- Work Commute Share is the percentage of work trips carried by single auto, shared ride (car or vanpools of two or more persons), and transit modes. Commute shares for work trips are particularly important since they occur during times of heaviest congestion in the morning and evenings. Greater transit and shared-ride percentages indicate that more persons are traveling in fewer vehicles. Reflecting the increased delay and freeway congestion that would occur if no transportation system improvements were made, there would be some small decline in drive alone travel from year 1990 (72 percent) to year 2010 (70 percent), with a commensurate small increase in transit travel (10 percent in 1990 to 11 percent in 2010).

1. Introduction and Regional Overview (cont.)

b. Identifying Future MTS Improvements

The RTP EIR suggests that an ambitious program of future transportation improvements will be needed to confront the projected decline in Bay Area mobility. Exactly what combination of capital investment and operational strategies should be pursued is less clear at this time.

The EIR was conducted under the guidelines and parameters of the California Environmental Quality Act (CEQA). As described above, the EIR evaluated what would occur if no future transportation improvements were made--the "No Project Alternative." In addition, the EIR examined three "improvement" alternatives: the Transit Capacity, Highway Capacity, and Transit/Highway Blend alternatives, each representing a conceptual package of future MTS investments. The EIR analyzed the benefits and drawbacks of implementing these various alternatives in terms of mobility, air quality, and other physical and social impacts.

o The Process

To develop a responsive and comprehensive long range transportation strategy, this Regional Transportation Plan incrementally builds on the body of technical findings and conclusions included in the RTP Environmental Impact Report, as explained in the following process:

- The RTP first identifies those projects currently programmed in the 1992-96 Transportation Improvements Program (TIP), adopted by the Commission in September 1991. These projects are a base of initial improvements that would form the foundation of a 20 year regional plan. Given their funding commitments, they are likely to be implemented in the future, as long as they satisfy other required tests of feasibility (for example, secure full funding and satisfy all necessary project level environmental requirements).

This first set of projects is presented in more detail in Section IV.D.6.

In addition, these projects would be augmented by supporting program recommendations. These recommendations, largely operational in nature, would make the existing Metropolitan Transportation System work better and would lay the foundation for a broader future MTS improvement package. They are described in sections IV.D.7 through IV.D.12.

- The RTP then recommends a broad set of options for the year 2010 that are not assumed at this juncture to be part of the Regional Transportation Plan. The list consists of the numerous improvements examined as part of the Transit Capacity, Highway Capacity, and/or Transit/Highway Blend DEIR transportation alternatives, as well as project suggested during the Draft RTP public review and comment period. These options represent a wide range of improvements the Commission may want to consider, among others, as part of the 1992 RTP Update.

These options are also presented in Section IV.D.6.

MTC is deferring action on these future options to allow the Commission and the public the maximum opportunity to fully consider the ramifications of these future transit and highway choices. Ongoing discussions will also focus on:

- the policy priorities highlighted in the Preface to this Regional Transportation Plan;
- institutional changes that may enhance or hinder the Commission's ability to implement its recommended transportation improvements; and
- the financial capabilities of the region.

These and other considerations pertinent to this evolving decision process are explored in section IV.E "Action Element Summary," and V. "Financial Element."

TABLE IV-I
1990-2010 Regional Comparison: No Future Mobility Improvements

	1990	2010 WITHOUT IMPROVEMENTS	AMOUNT OF CHANGE	PERCENT CHANGE
A. HIGHWAYS				
Daily VMT (in 1000s)	104,363	124,703	20,340	19%
Congestion (freeway am lane)	1,168	1,427	259	22%
Daily VHT (in 1000s)	4,900	6,816	1,916	39%
Daily VHD (in 1000s)	1,932	3,331	1,399	72%
Morning Speed (mph)	21.4	19.1	-2.3	-11%
Mode Share (work trips)				
Total Work Trips	4,337,123	5,311,512	974,389	22%
Drive Alone	72%	70%	-2%	-3%
Shared Ride	18%	19%	1%	6%
B. TRANSIT				
Trips (work trips)	453,414	584,535	131,121	29%
Mode Share (work trips)	10%	11%	1%	10%



CHAPTER IV:
ACTION ELEMENT

D. MTS ANALYSIS AND RECOMMENDATIONS

2. MTS System Analysis: Eastern Subarea



2. MTS Systems Analysis: Eastern Subarea

a. Subarea Description

The Eastern Subarea includes Alameda, Contra Costa and Solano counties. It is an area of considerable diversity in topography and development patterns. The Bay plain corridor from Crockett to Fremont is extensively developed with a wide range of urban activities. It is the site of the region's third largest city, Oakland. Sizeable pockets of vacant land are found to the north around Rodeo and Hercules, to the south in Fremont, and in major portions of Solano County. Aside from infilling in the older, established communities, these vacant lands represent the last remaining foci for significant development, primarily residential, in the corridor.

Eastern Contra Costa and Alameda counties, east of the East Bay Hills, represent areas in transition. Traditional patterns of low-density, suburban development are giving way to denser, more economically diversified forms of development. Consequently, cities like Walnut Creek, Concord, Pleasanton and Dublin, once referred to as "bedroom" communities, are experiencing more balanced development patterns with significant increases in employment opportunities. In Solano County most urban development is concentrated in small cities (Vallejo, Fairfield and Vacaville) straddling I-80. Two-thirds of the county's land area is in agriculture or marshlands, or lies idle.

b. Demographics (1990-2010)

In 1990 the subarea had a total population of approximately 2,390,000 people and 1,018,000 jobs. ABAG Projections 90 estimates subarea population will increase by 24 percent by 2010. Solano County (47 percent) will grow most rapidly, followed by Contra Costa (25 percent) and Alameda County (18 percent). It is estimated that by 2010 the subarea's total employment will increase dramatically (40 percent), with the most rapid growth again being experienced by Solano County (67 percent). There will be a continuation of long-distance commuting to jobs not only within the Eastern Subarea but to San Francisco and Santa Clara County as well.

c. Current System Description (1990)

- Freeway and Highway System

The Eastern Subarea is traversed from north to south by two major freeway systems: I-80/I-880, and I-680. Like their counterparts in the Western Subarea, these freeways carry large volumes of interregional, commuter and truck traffic. Congested conditions on these freeways during peak periods are especially critical in the Eastbay Corridor, Central Contra Costa County and the Tri-Valley area of Alameda County. Constraints in right of way and environmental problems limit the potential to increase their capacities. The important east-west freeways are Route 37/I-780 in Solano County, Route 4 in northern Contra Costa County, Route 24/I-980, I-580 and Route 92 in the central area and Route 84 in

the south. I-80 and I-580 are important interregional facilities connecting the Bay Area to Sacramento (I-80) and the Central Valley (I-580). Solano and Contra Costa counties are connected by the Carquinez and Benicia-Martinez bridges. The Antioch Bridge links Contra Costa with Sacramento County, and the Rio Vista Bridge connects Solano and Sacramento counties. Freeway linkages to the Northern and Western subareas are provided via the Richmond-San Rafael Bridge (connecting to the Northern Subarea) and the Bay, Hayward-San Mateo and Dumbarton bridges (connecting to the Western Subarea). Figures IV-1, IV-2, IV-3 and IV-4 depict both major highways and important arterials in this subarea, by county.

- Transit System

The transit operators serving the Eastern Subarea are:

- o Alameda Contra Costa Transit District (AC)
- o Bay Area Rapid Transit District (BART)
- o Amtrak
- o Central Contra Costa Transit Authority (CCCTA)
- o Eastern Contra Costa Transit Authority (Tri Delta)
- o Western Contra Costa County Transit Authority (WestCAT)
- o Union City Transit
- o Livermore/Amador Valley Transit Authority (LAVTA)
- o Solano County city transit services (Benicia, Vallejo, Vacaville and Fairfield/Suisun)
- o Alameda/Oakland and Vallejo ferry service

Major corridors of transit service throughout the Eastern Subarea are shown in Figures IV-5, IV-6, IV-7 and IV-8 by subarea county.

AC Transit provides local and intercity bus service in the western parts of Alameda and Contra Costa counties, extending from Crockett/Rodeo in the north to the southern city limits of Fremont. In addition, AC Transit provides transbay service across the Bay and Dumbarton bridges. AC Transit operates 89 local routes, five express routes, and 35 transbay routes, totalling approximately 2.85 million vehicle hours and 25.0 million vehicle miles annually. Peak period headways are 10 to 12 minutes on its trunk routes, and 15 to 30 minutes on its local routes.

BART operates rail service along the Eastbay plain between Richmond and Fremont and transbay service from Fremont, Concord and Richmond via the Transbay Tube to San Francisco and Daly City. The three transbay routes and one Eastbay route provide service totaling 1.39 million vehicle hours annually and 39.73 million vehicle miles annually. There are 34 stations in the system. Trains operate with 7.5-minute headways during peak periods and 15-to-20 minute headways during off-peak periods. BART also operates Express buses serving Antioch/Pittsburg, Livermore, Martinez, Crockett, Pinole and Hercules.

Amtrak operates two interstate trains (*California Zephyr*--Chicago to Oakland, and *Coast Starlight*--Seattle to Los Angeles) and one intrastate train (*San Joaquin*--Bakersfield to Oakland via Martinez) through the subarea. Because of scheduling and frequent delays in arrival/departure times at Amtrak stations within the

subarea, the service is not a significant component of the limited subarea transit system.

CCCTA, or County Connection, is the second largest bus operator in the subarea. CCCTA's service area encompasses all of Central Contra Costa County, which includes the cities along Route 24 and I-680. All of CCCTA's current fixed-route bus service is structured to serve BART stations. Service is also provided to the Martinez Amtrak Station. CCCTA operates a total of 24 bus routes and approximately 277,000 annual revenue vehicle hours and 3,660,000 annual revenue vehicle miles. Its bus services operate on 12-to-30 minute headways during peak periods and on 15-to-60 minute headways during the off-peak periods. CCCTA also coordinates paratransit service within the county.

Tri Delta provides fixed-route and paratransit services in Eastern and Western Contra Costa County, serving Brentwood, Antioch, Pittsburg and West Pittsburg. Tri Delta operates seven routes with 60-minute headways, operating 756,000 annual revenue vehicle miles and 52,000 annual revenue vehicle hours. Tri Delta schedules are timed to meet with BART Express buses, and service is provided to the Antioch Amtrak Station.

WestCAT provides fixed-route and paratransit services in Northern and Western Contra Costa County, serving Pinole, Hercules, Crockett, Rodeo, Port Costa and the Montara Bay area. WestCAT also operates the Martinez Link between the Richmond BART Station and the county seat in Martinez. WestCAT operates seven routes with 30-to-60-minute headways, 437,000 annual revenue vehicle miles and 33,000 annual revenue vehicle hours. WestCAT schedules are timed to meet with BART Express buses.

LAVTA is a joint powers agency consisting of the cities of Dublin, Livermore and Pleasanton and Alameda County. Fixed-route service is provided in a 42-square-mile area encompassing three cities and adjacent unincorporated areas of eastern Alameda County. LAVTA also provides paratransit services for the cities of Dublin and Livermore. LAVTA's 10 fixed-routes operate at 30-minute headways and annually provide approximately 1,300,000 revenue vehicle miles and 82,100 revenue vehicle hours of service. LAVTA schedules are timed to meet with BART Express and County Connection buses.

Union City Transit operates nine buses on six fixed routes at 30- and 40-minute headways within the limits of the city. Fixed-route services annually provide approximately 425,000 revenue vehicle miles and 29,000 revenue vehicle hours of service. Paratransit services are provided through a Tri-City Program which is operated by the City of Fremont. Union City Transit participates in the funding of Dumbarton Transbay Service and coordinates its service and bus schedules to meet BART trains at the Union City Station.

City of Benicia operates fixed-route bus service within Benicia, between Benicia and Vallejo, and between Benicia and the Pleasant Hill BART Station in Contra Costa County. Benicia's two fixed-routes operate on 30-minute headways during the peak periods, and annually provide approximately 281,000 revenue vehicle miles and 12,000 revenue vehicle hours of service. Benicia also provides dial-a-ride transit services within the city and to Vallejo.

Fairfield/Suisun Transit: The cities of Fairfield and Suisun City operate a consolidated fixed-route bus system, which runs within the two cities and to Vacaville. The Fairfield/Suisun Transit system operates six fixed routes. The service provides 30- to 60-minute headways during the peak periods, and annually provides approximately 328,000 revenue vehicle miles and 21,400 revenue vehicle hours of service. Fairfield and Suisun City also provide dial-a-ride transit services for elderly and disabled individuals within and between the two cities.

City of Vallejo operates fixed-route bus service within Vallejo, between Vallejo and Fairfield, and between Vallejo and the El Cerrito Del Norte BART Station in Contra Costa County. Vallejo's bus service operates eight fixed routes with approximately 1,800,000 revenue vehicle miles and 95,000 revenue vehicle hours of service annually. The Solano Transportation Authority provides dial-a-ride transit services for elderly and disabled individuals within the city.

Vallejo also operates ferry service between Vallejo and San Francisco. The service provides one morning and one afternoon commute run and midday service, for a total of 5,000 annual service hours.

City of Vacaville operates fixed-route bus service within the city limits. Vacaville's two fixed routes operate on 30- to 60-minute headways during the peak periods, and annually provide approximately 133,000 revenue vehicle miles and 10,000 revenue vehicle hours. Vacaville also provides dial-a-ride transit services for elderly and disabled individuals within the city.

Cities of Dixon, Rio Vista, and the Solano County Transportation Authority: The cities of Dixon and Rio Vista operate dial-a-ride transit services. The Dixon service operates within the Dixon city limits. Rio Vista's services operate within the city and provide limited service to Fairfield, Lodi and Stockton. The Solano Transportation Authority, a joint powers agreement between the county and cities of the county, operates a countywide dial-a-ride transit program for elderly and disabled individuals. The service provides for medical trips to Napa, San Francisco, and Sacramento.

Ferry Service: Ferry service is provided on transbay routes from Alameda/Oakland and Vallejo to San Francisco. A description of these services is included in the following "Western Subarea" discussion.

- Transfer Points

The following facilities serve as key regional transfer points for passengers or freight in the transportation system of the Eastern Subarea:

- Alameda County
 - o BART stations (West Oakland, 12th St., 19th St., MacArthur, San Leandro, Bayfair, Union City, Hayward, Fremont, Coliseum, Berkeley)
 - o Oakland International Airport
 - o Oakland Ferry Terminal
 - o Alameda Ferry Terminal
 - o The Port of Oakland
 - o Encinal Port Terminals
 - o Oakland Amtrak Station

- Contra Costa County
 - o BART Stations (El Cerrito Del Norte, Richmond BART/Amtrak, Concord, El Cerrito Plaza, Pleasant Hill, Walnut Creek)
 - o Buchanan Field/County Airport
 - o Martinez Amtrak Rail Station
 - o Port of Richmond

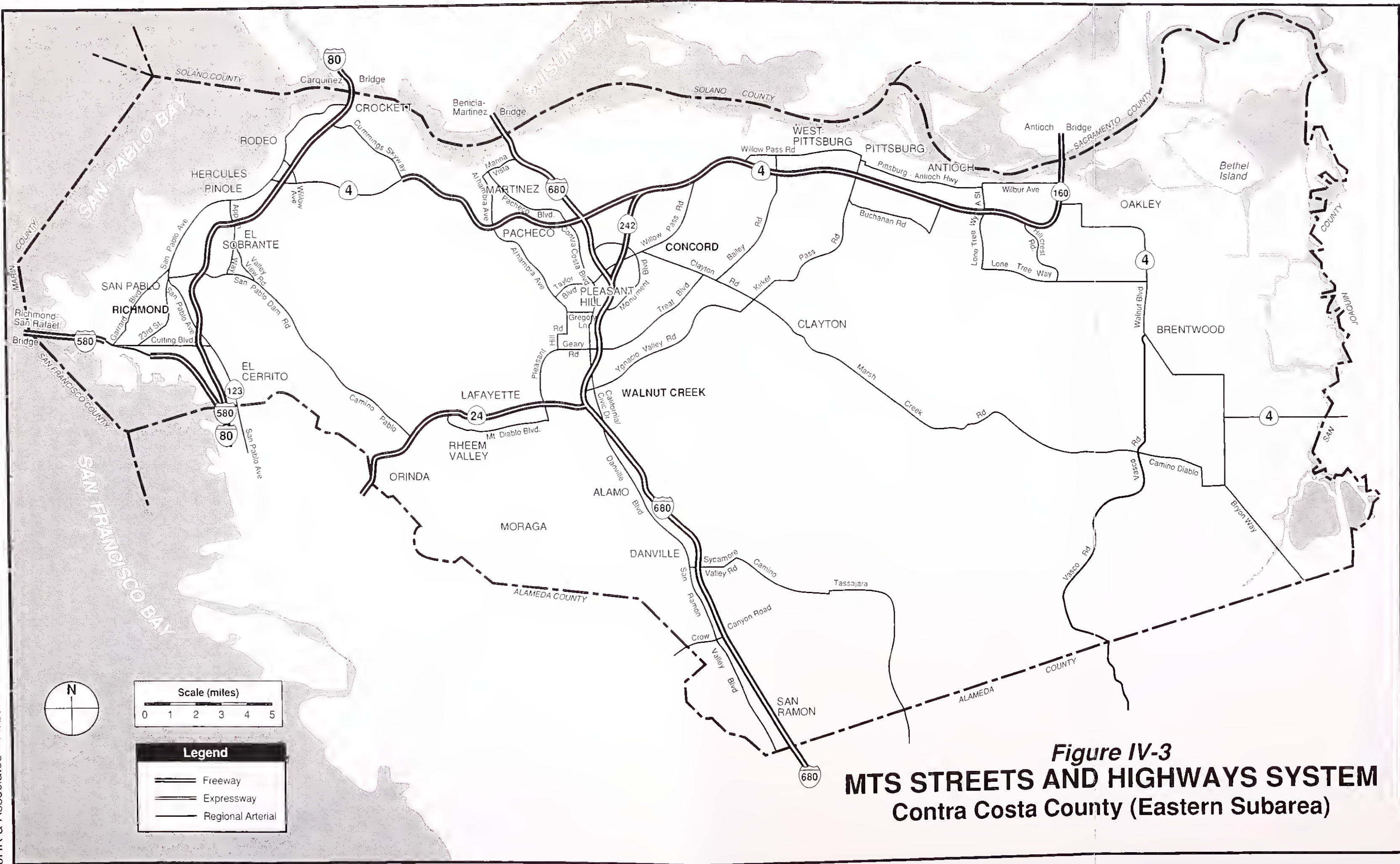
- Solano County
 - o Vallejo Park & Ride lot
 - o Vallejo Ferry Terminal
 - o Solano Mall Transfer Center
 - o Port of Benicia



Figure IV-1









MTS STREETS AND HIGHWAYS SYSTEM

Solano County (Eastern Subarea)

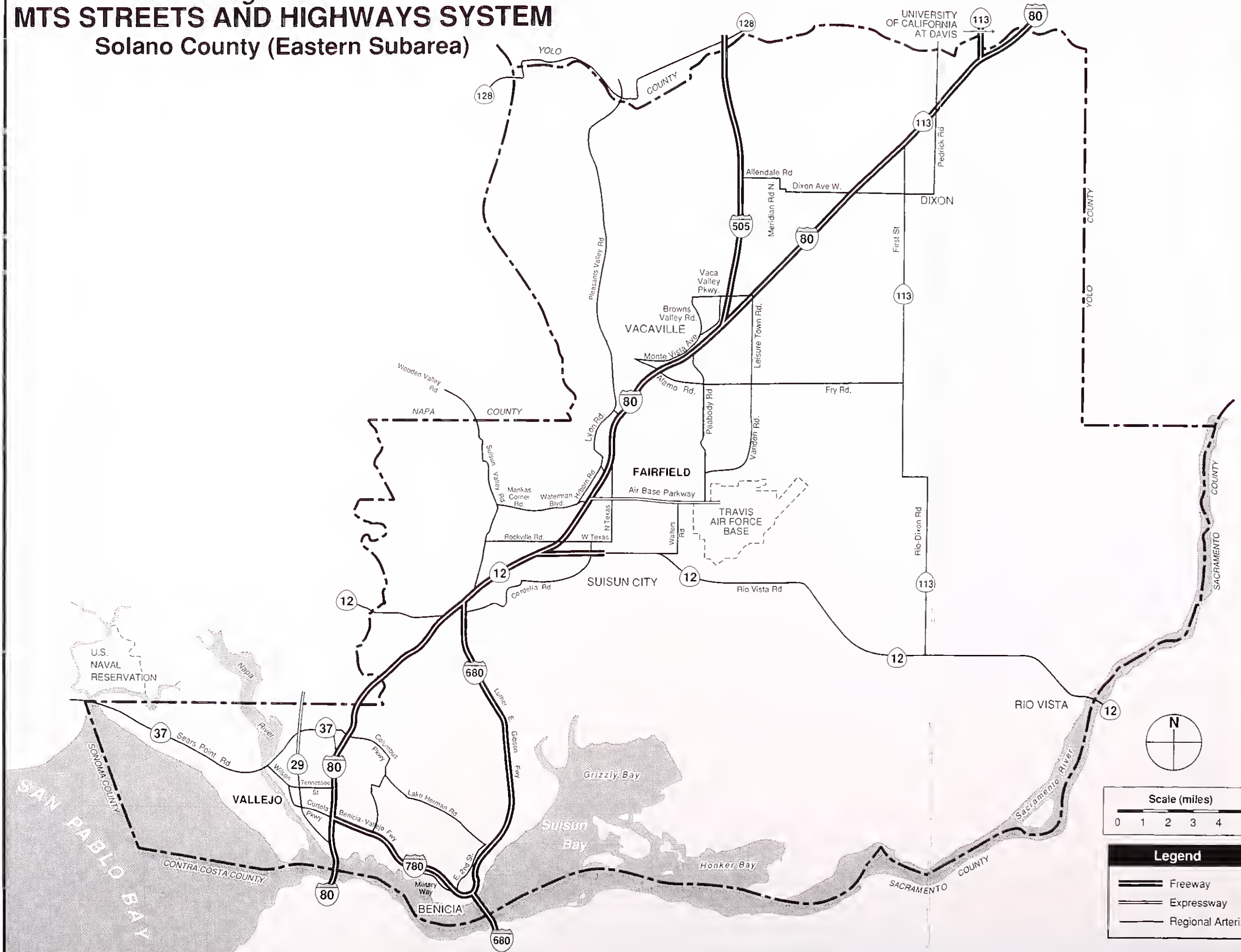




Figure IV-5
MTS TRANSIT CORRIDORS
Alameda County (Eastern Subarea)

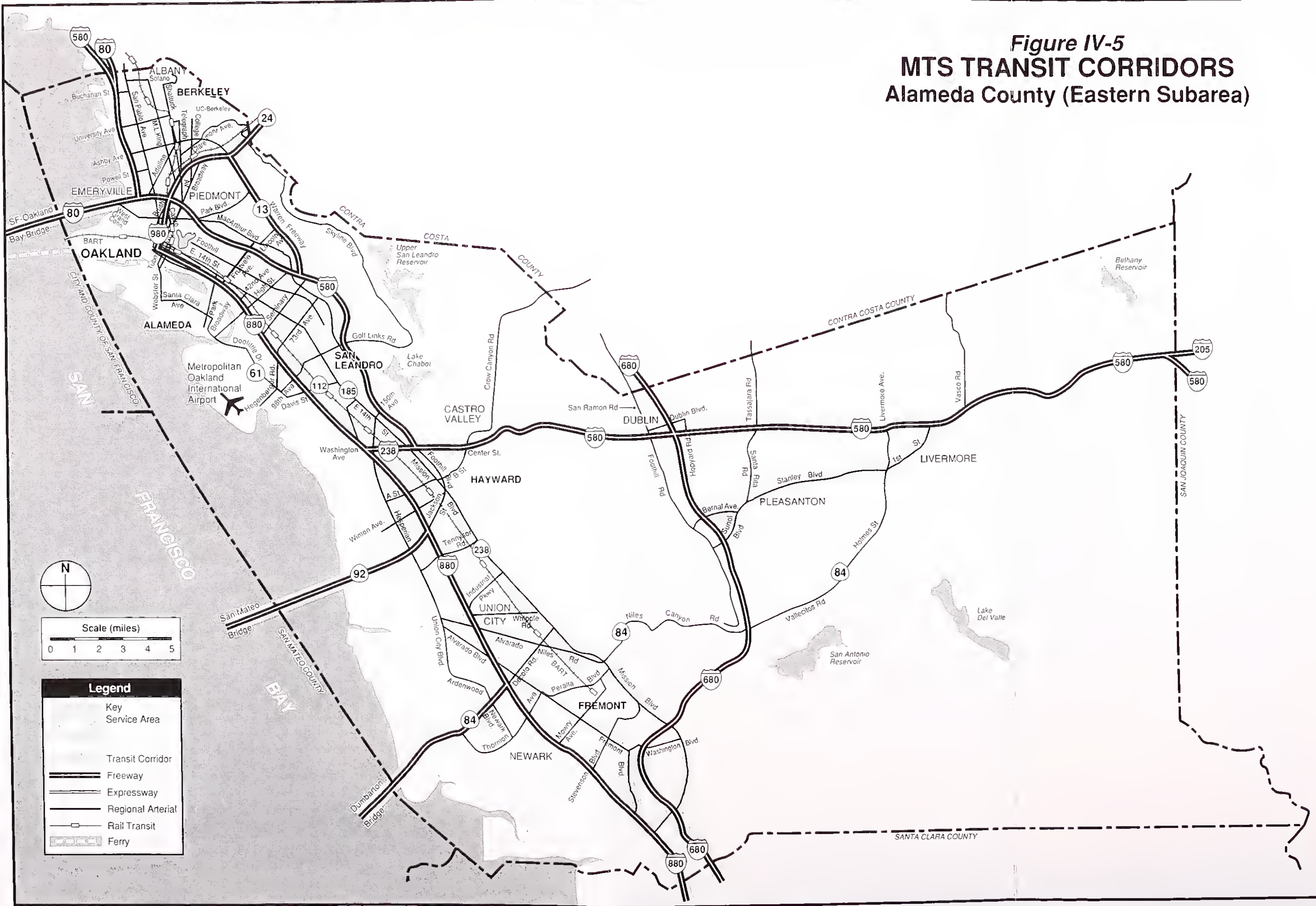
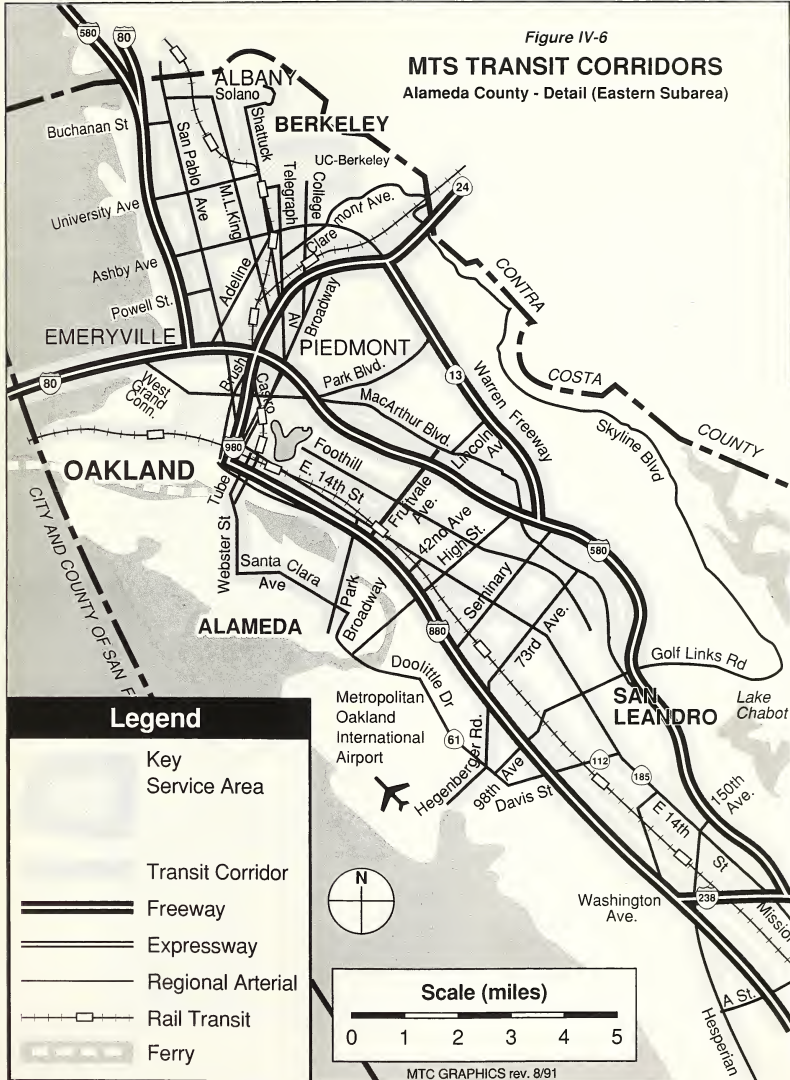




Figure IV-6

MTS TRANSIT CORRIDORS

Alameda County - Detail (Eastern Subarea)





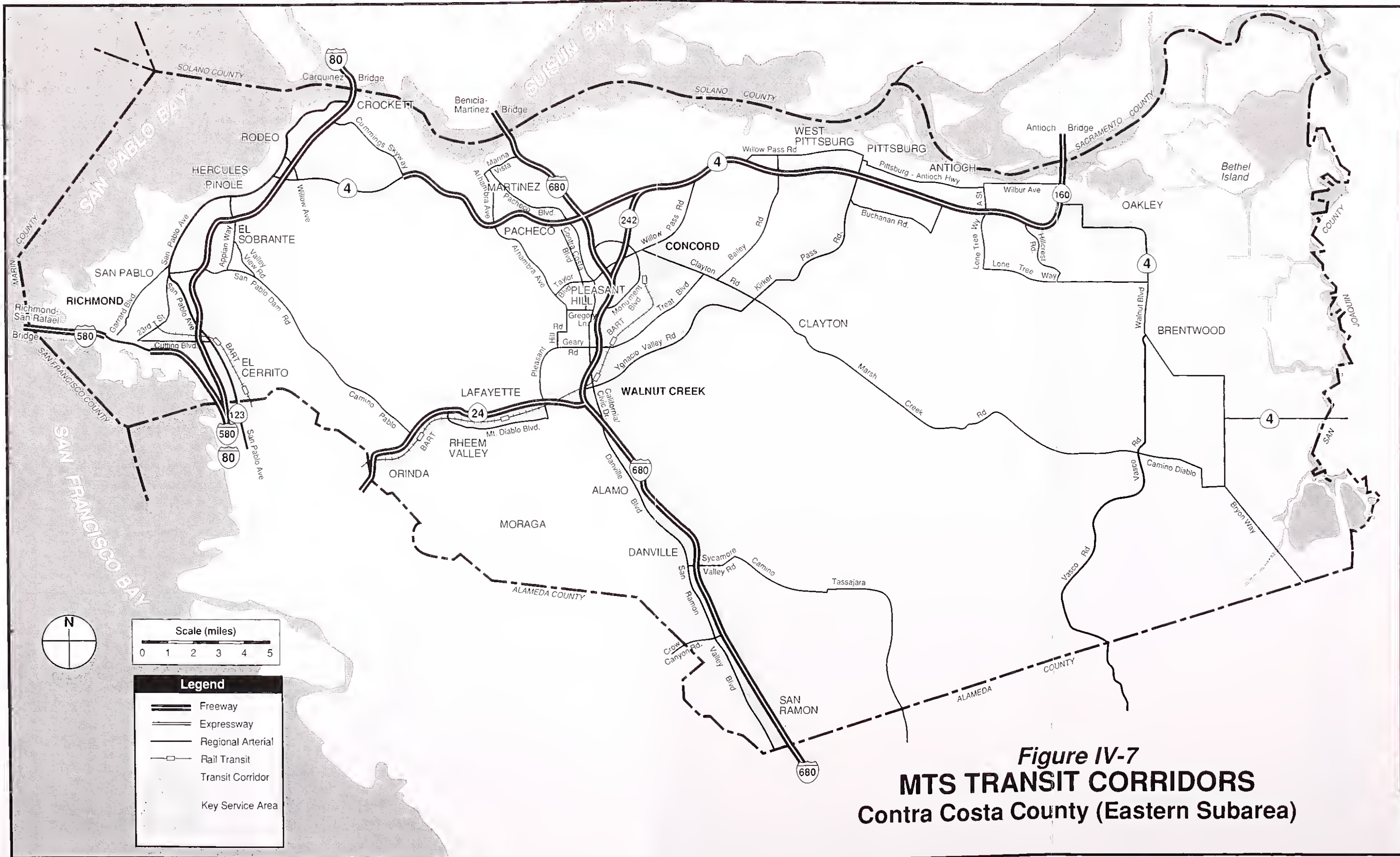
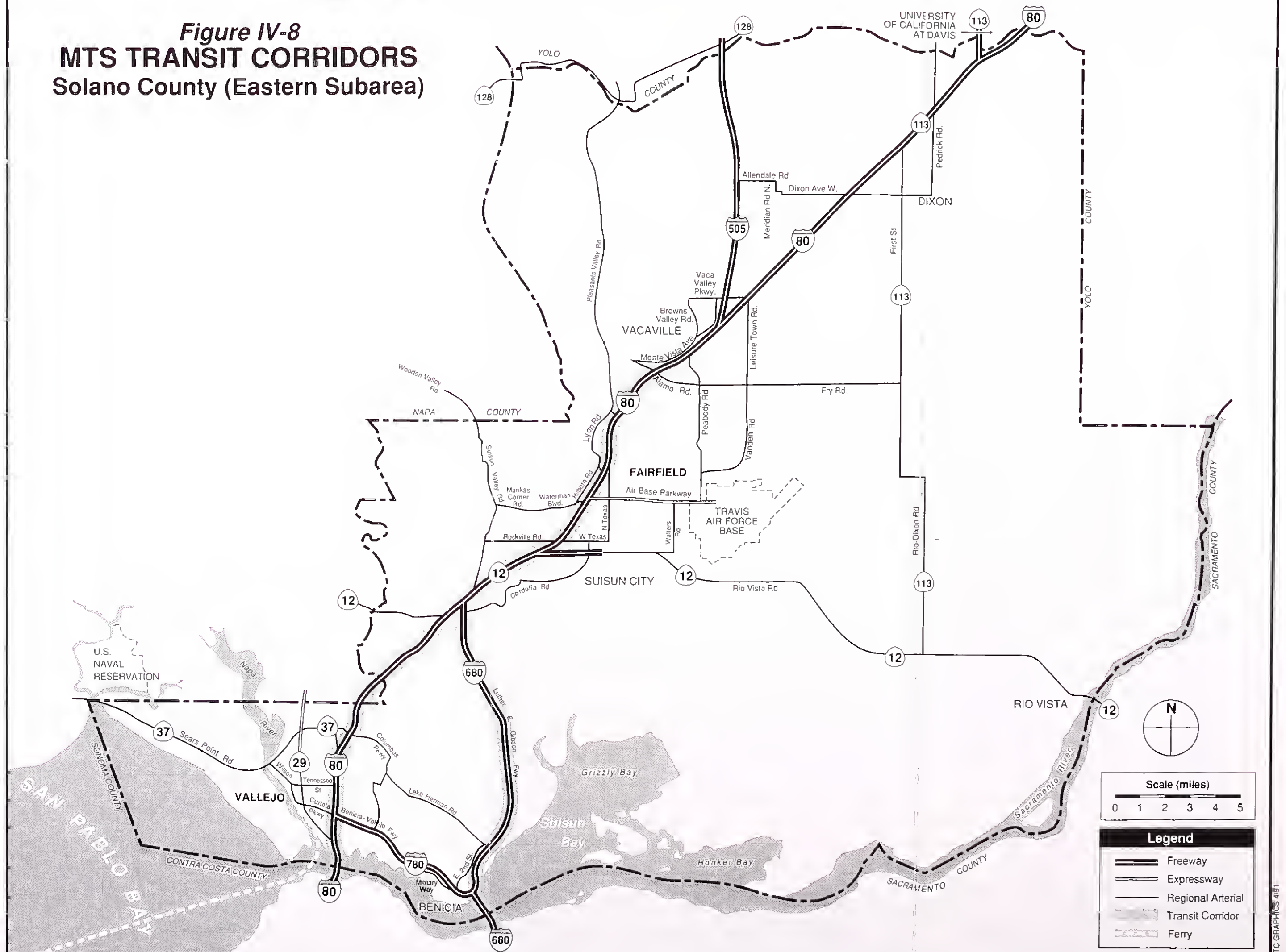
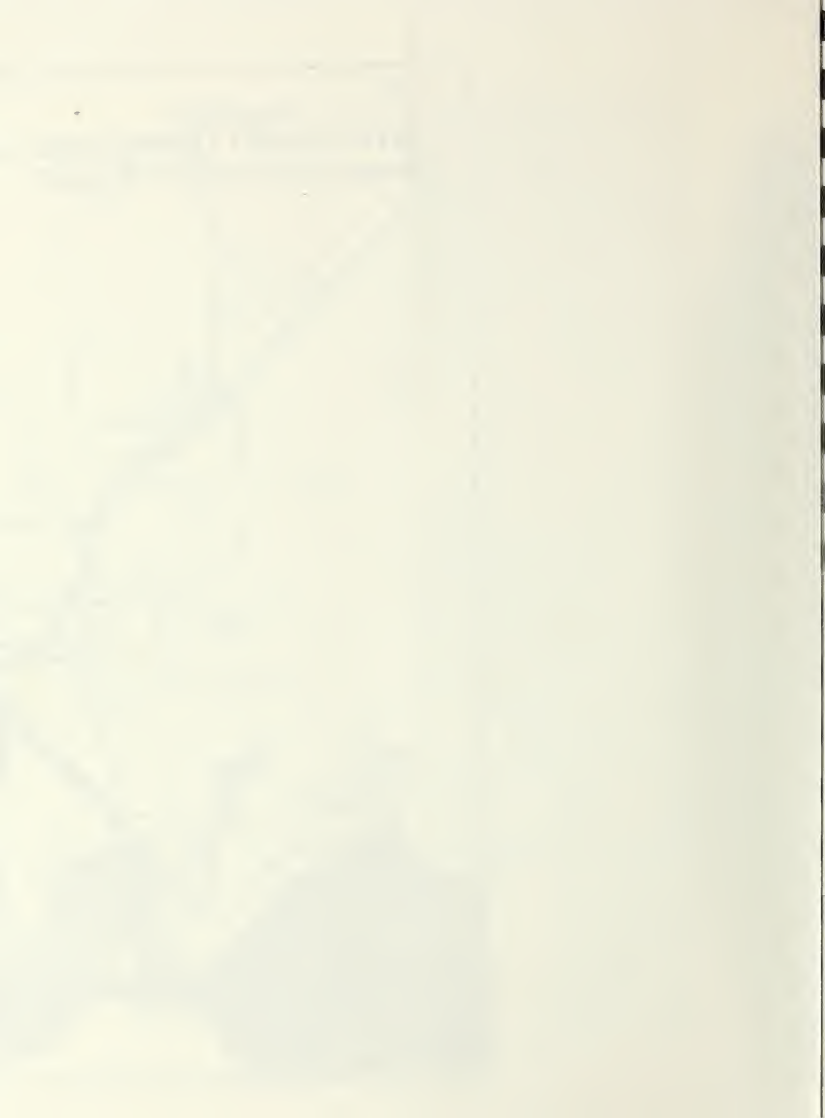




Figure IV-8
MTS TRANSIT CORRIDORS
Solano County (Eastern Subarea)

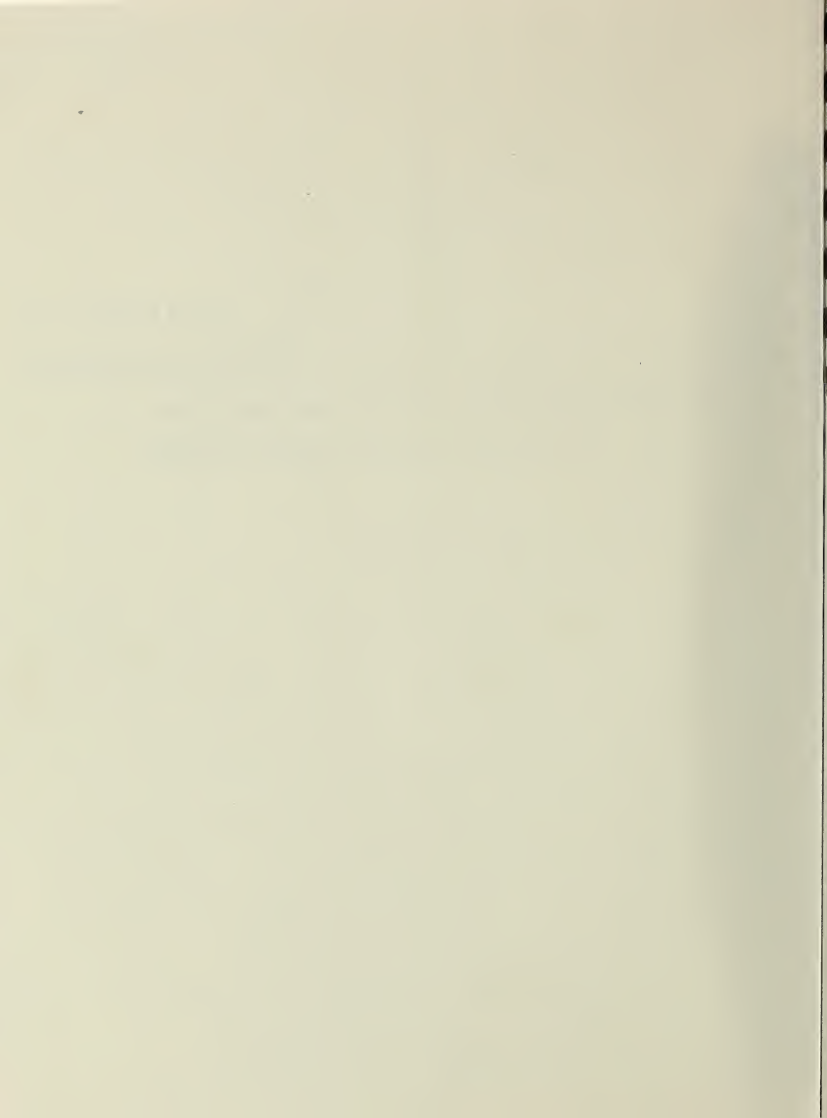




CHAPTER IV:
ACTION ELEMENT

D. MTS ANALYSIS AND RECOMMENDATIONS

3. MTS System Analysis: Western Subarea



3. MTS Systems Analysis: Western Subarea

a. Subarea Description

The Western Subarea, often referred to as the "Peninsula," includes the City and County of San Francisco and San Mateo County. It is dominated by the densely urbanized corridor along the Bay plain, extending from San Francisco, the region's second largest city, to Santa Clara County. Other important cities in the corridor include Daly City, the city of San Mateo, and Redwood City. The subarea also includes the developing coastal area from Pacifica to Half Moon Bay and the undeveloped coastal mountain range between the Pacific Ocean and the Bay.

b. Demographics (1990-2010)

In 1990 the subarea had a total population of approximately 1,370,000 people and 875,000 jobs. ABAG Projections 90 estimates subarea population will increase only modestly (6 percent) by 2010, with employment growing by 24 percent for the same period. San Francisco will continue to rank as the region's second largest employment center, behind Santa Clara County. Residential and employment growth throughout this relatively mature subarea will be slower than growth elsewhere in the region. Since jobs will continue to grow faster than the number of new workers in the subarea, an increasing number of workers will commute into the subarea.

c. Current System Description (1990)

- Freeway and Highway System

This subarea is served by an extensive network of freeways, most of which have a north-south alignment. Two freeways, I-280 and Route 101, run the full length of the corridor and carry large volumes of interregional and commute traffic. Route 101 is also a major truck route. The potential to increase the capacity of these facilities, especially Route 101, is limited by physical and environmental constraints. Route 1, a narrow, winding, limited-capacity highway connects the small communities along the Pacific Coast to San Francisco. East-west access is provided by two "coast-to-coast" facilities: Route 84 to the south and Route 92 which connects the city of San Mateo to Half Moon Bay. El Camino Real (Route 82), a major arterial, runs the full length of the corridor parallel to Route 101, and serves as a major intercity connector.

Transbay access is provided by the Golden Gate Bridge, which connects San Francisco to Marin County; and the San Francisco - Oakland Bay, Hayward-San Mateo, and Dumbarton bridges, which provide linkages between the Peninsula and the East Bay. The Golden Gate and Bay bridges are heavily congested during peak commuter periods.

Figures IV-9 and IV-10 depict major highways and important arterials in this subarea.

- Transit System

The major transit operators providing service within the Western Subarea are:

- o San Francisco Municipal Railway (SF Muni)
- o San Mateo County Transit District (SamTrans)
- o Peninsula Commute Service (CalTrain)

Transit connections to the Northern Subarea are provided by the Golden Gate Bridge Highway and Transportation District (GGBHTD) (buses and ferries), and to the Eastern Subarea by AC Transit (express bus service across the Dumbarton Bridge), BART and ferry service. (Service characteristics of GGBHTD, AC Transit and BART are outlined in the descriptions of other subareas.) Major corridors of transit service throughout the subarea are highlighted in Figures IV-11 and IV-12.

Muni provides transit service throughout the 49-square-mile area of San Francisco with four modes: light rail vehicle (LRV), trolley bus, diesel bus and cable car services. Muni operates 82 total routes, including five LRV routes, three cable car routes, and 74 trolley and diesel coach routes, providing limited, express, and special peak-hour services, and 24-hour service on some routes. Muni's route system is a modified grid and includes both radial and cross-town routes. Fifty-four lines operate from outer areas of San Francisco into the central business district. Service is provided to within 1/4 mile of all locations in the city. Muni vehicles operate approximately 3 million service hours and 25.5 million service miles annually. Peak period headways are 3 to 6 minutes on most routes, and 6 to 10 minutes on most midday routes.

SamTrans service includes local service on major arterials and express service on freeways and arterials throughout San Mateo County. The major north/south service routes include Route 1, Route 101, I-280, El Camino Real, and Alameda de Las Pulgas. Major east-west service includes Route 92 and the John Daly/Mission corridor. SamTrans operates a total of 52 local and 11 express routes per day, which account for approximately 605,300 total revenue hours and 7.4 million revenue miles annually. Route headways range from 10 to 60 minutes during the peak hours and 20 to 90 minutes midday and nights. Express service runs only during peak hours and in the peak direction.

CalTrain commuter service runs between the Cahill Station in San Jose and the 4th and Townsend Terminal in San Francisco. Service is provided by 54 trains per weekday with stops at 14 stations in San Mateo County. Route headways range from 4 to 30 minutes during peak hours (in the peak direction) and 1 to 2 hours midday, evenings, and weekends. (See Southern Subarea for additional CalTrain description.)

Ferry Services from Alameda/Oakland (Jack London Square) and Vallejo all converge on the Ferry Building in San Francisco.

Ferry service also operates between San Francisco and Marin County. The ferry services from Alameda/Oakland operate on 60-minute headways during the peak period and provide two round trips during the midday.

- Transfer Points

The following facilities serve as key regional transfer points for the Western Subarea:

- | | |
|------------------|---|
| San Francisco | o BART Stations (Embarcadero, Montgomery, Powell, Civic Center) |
| | o Ferry Terminal |
| | o CalTrain Depot |
| | o Transit stops in the Mission Street Corridor |
| | o Transbay Terminal |
| | o Port of San Francisco |
| San Mateo County | o Daly City BART Station |
| | o Menlo Park CalTrain Station |
| | o Port of Redwood City |
| | o San Francisco International Airport |

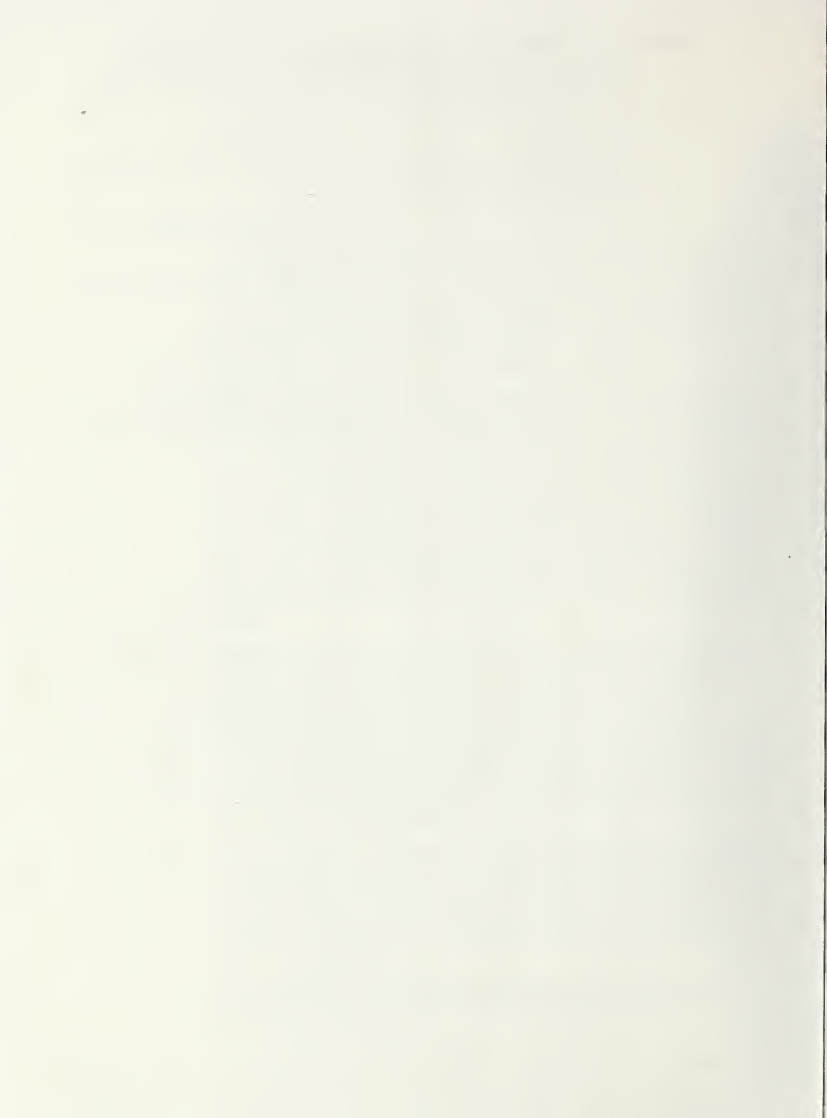


Figure IV-9
MTS STREETS AND HIGHWAYS SYSTEM
San Francisco County (Western Subarea)

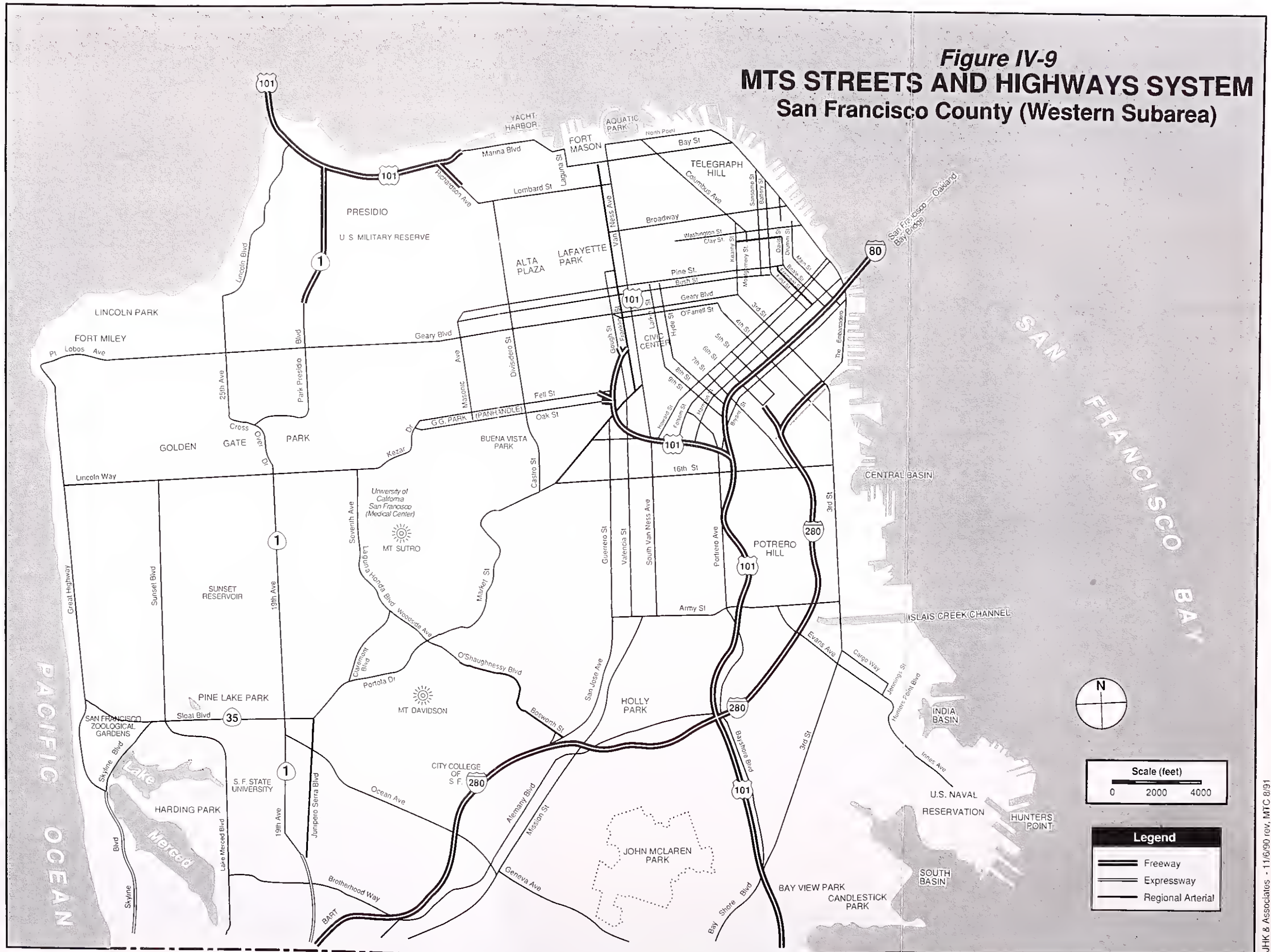
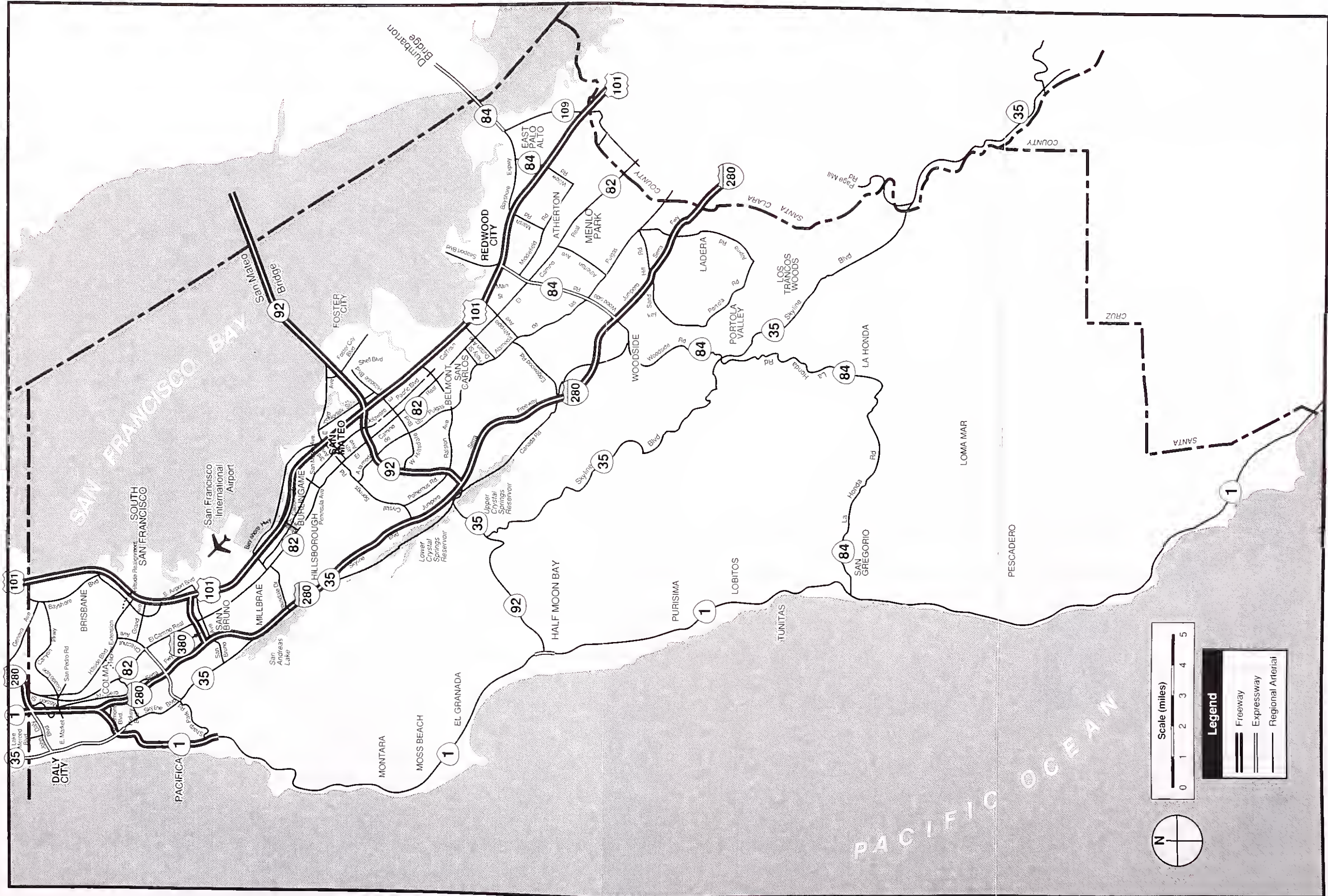




Figure IV-10
MTS STREETS AND HIGHWAYS SYSTEM
San Mateo County (Western Subarea)



THE HISTORY OF THE
CITY OF BOSTON
FROM 1630 TO 1800

BY
JOHN H. COLEMAN

IN TWO VOLUMES.

VOLUME II.

1700-1800.

BOSTON:

WILLIAM B. E. BENTLEY,

187 N. BOSTON ST.

187 N. BOSTON ST.

187 N. BOSTON ST.

187 N. BOSTON ST.

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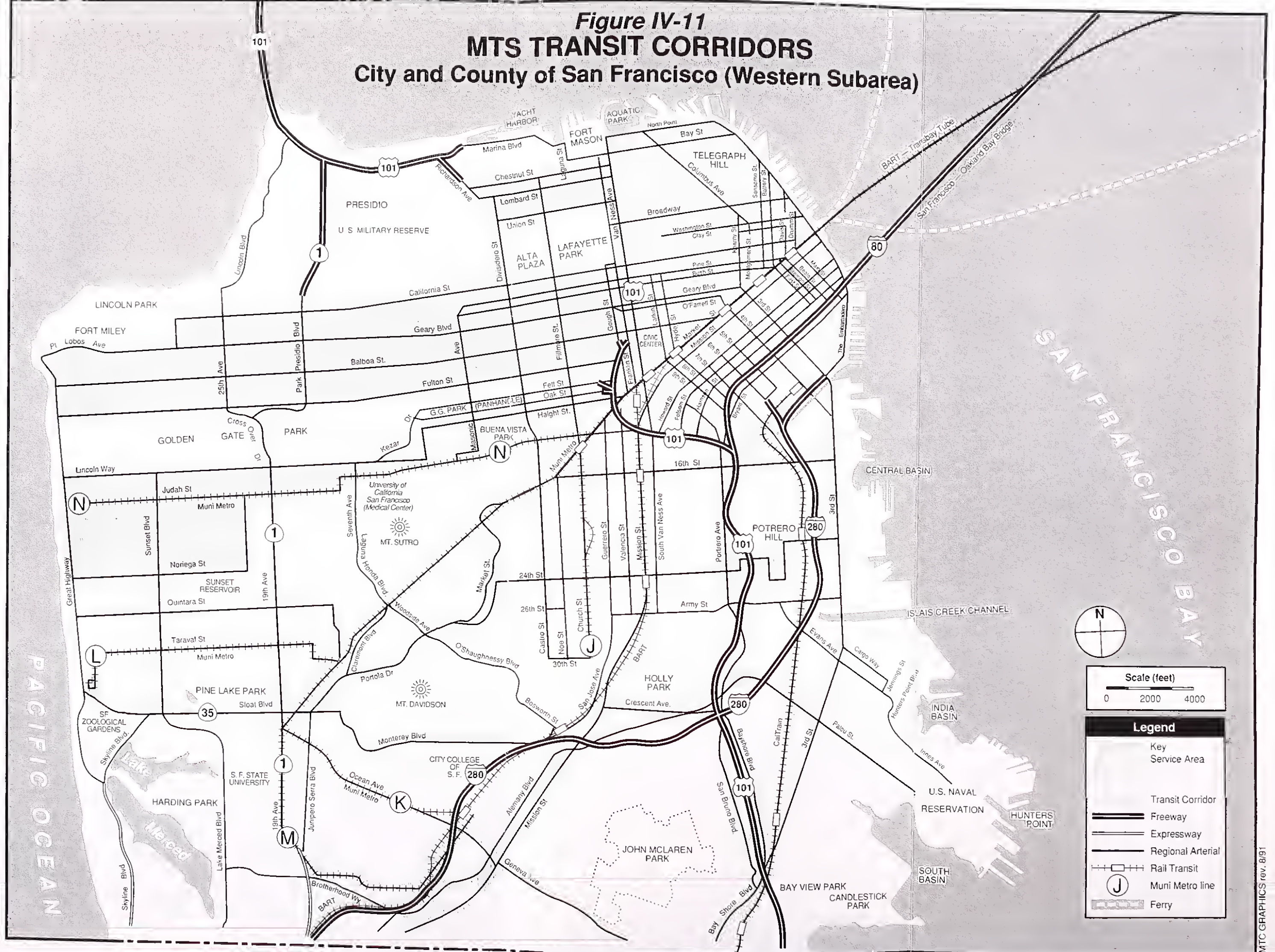
187 N. BOSTON ST.

187 N. BOSTON ST.

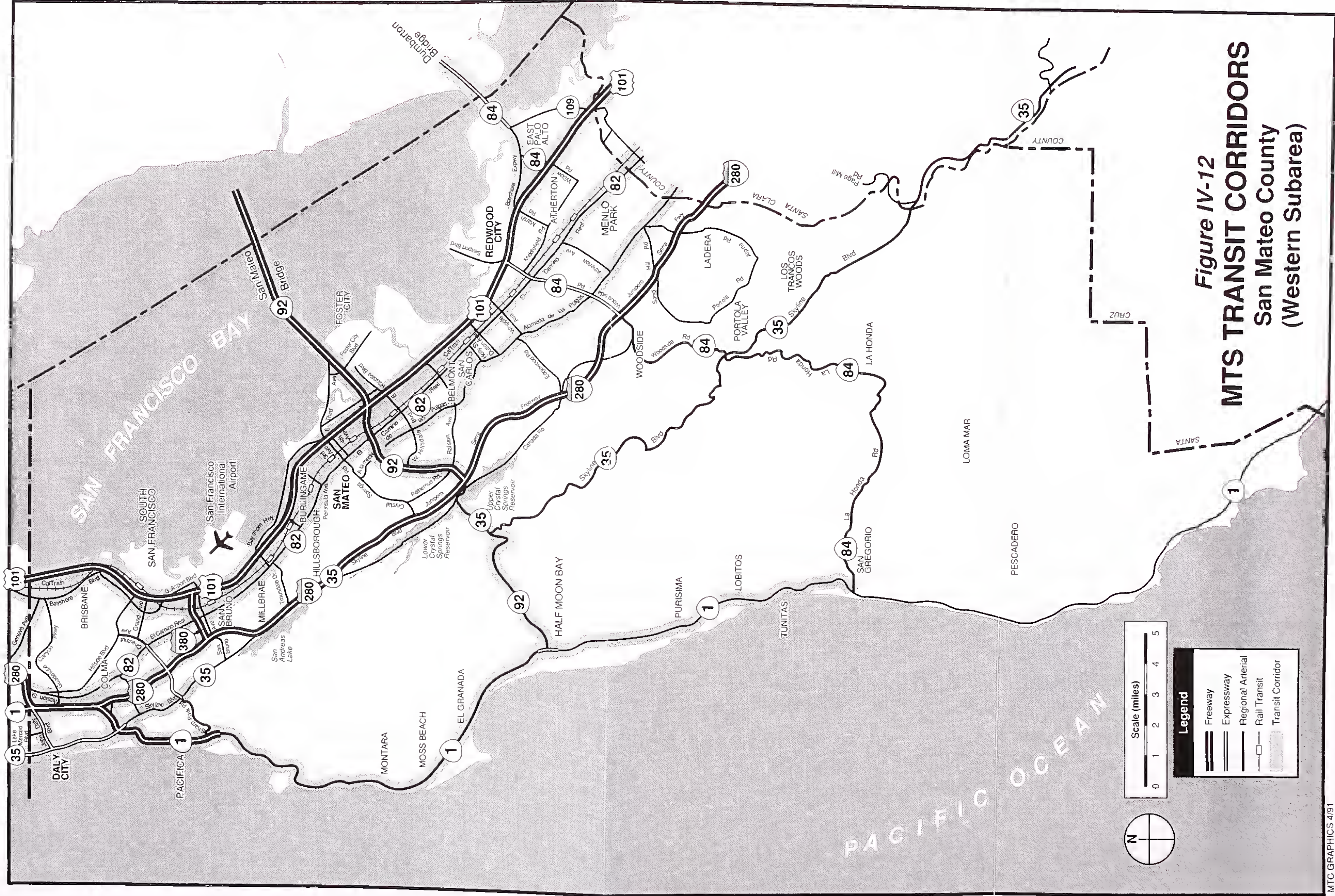
187 N. BOSTON ST.

187 N. BOSTON ST.

Figure IV-11
MTS TRANSIT CORRIDORS
City and County of San Francisco (Western Subarea)









CHAPTER IV:
ACTION ELEMENT

D. MTS ANALYSIS AND RECOMMENDATIONS

4. MTS System Analysis: Northern Subarea



4. MTS Systems Analysis: Northern Subarea

a. Subarea Description

The Northern Subarea consists of Marin, Sonoma, and Napa counties. This subarea includes many of the least urbanized portions of the Bay Area, such as western Marin and Sonoma counties and Napa County north of the city of Napa. Most urban activity is clustered in small cities straddling Route 101. The three counties face continuing development pressures, as jobs and population expand outward from their historic centers in the southwestern corner of the Subarea to the outlying cities of Novato, Petaluma, Santa Rosa, Rohnert Park, and Napa.

b. Demographics (1990-2010)

In 1990 the Northern Subarea had a total population of approximately 721,000 and about 287,000 jobs. ABAG Projections 90 estimates population will grow by approximately 27 percent and employment by 48 percent by 2010. The growth rates for both population and jobs are substantially higher in the Northern Subarea than for the region as a whole. (Year 2010 total population 913,000; total employment 426,000.)

c. Current System Description (1990)

- Freeway and Highway System

The major transportation facility in the Northern Subarea is Route 101, connecting Marin and Sonoma counties to San Francisco to the south and Mendocino County and the northwest California coast to the north. Route 101 travels through or very close to almost all major cities in Marin and Sonoma counties, and is the transportation artery along which most future development in this subarea is expected to occur.

I-580 connects Route 101 in San Rafael with I-80 in Richmond (in the Eastern Subarea) over the San Rafael Bridge. An additional connection from Route 101 to I-80 is provided by Route 37, traversing the northern end of San Pablo Bay from Novato to Vallejo. The primary connections from Napa County to the I-80 corridor are Routes 12 and 29; the latter is the major north-south arterial through the county, linking its main cities. Route 12 passes through Napa to Sonoma and Santa Rosa in Sonoma County.

Additional state highways in the Northern Subarea include Route 1, the coastal roadway linking Marin and Sonoma counties; Routes 121 and 128, connecting rural areas of Sonoma and Napa counties; and Route 116 in Sonoma County.

Figures IV-13, IV-14 and IV-15 depict major highways and important arterials in this subarea.

- Transit System

The major transit operators serving the Northern Subarea are:

- o Golden Gate Bridge, Highway and Transportation District (GGBHTD)
- o Cities of Santa Rosa, Petaluma and Napa
- o County of Sonoma

Major corridors of transit service throughout the subarea are highlighted in Figures IV-16, IV-17 and IV-18.

GGBHTD is the largest transit carrier in this area, and provides major trunk-line bus service along Route 101 between Marin and Sonoma counties and downtown San Francisco; it also provides local transit service to communities in Marin County. GGBHTD also operates ferry service from both Sausalito and Larkspur to the Ferry Terminal Building in San Francisco. GGBHTD currently operates a total of 53 bus routes and an annual total of approximately 7,589,000 revenue vehicle miles and 406,900 revenue vehicle hours. GGBHTD operates 5- to 30-minute peak period headways on both its commute services to San Francisco and feeder service to its ferry system, and 30 minute headways during the peak periods on its local services. GGBHTD's ferry services operate on 30-minute headways during the peak periods.

Santa Rosa Transit (CityBus) operates fixed route bus service within Santa Rosa and parts of the unincorporated Roseland area in Sonoma County. The 12 local routes operate on 30- to 60-minute headways during the peak period, and annually provide approximately 843,000 revenue vehicle miles and 64,000 revenue vehicle hours of service.

Petaluma Transit operates fixed route service within the city of Petaluma. Its five local routes operate on 60-minute headways during the peak period, and provide 170,000 revenue vehicle miles and 13,500 revenue vehicle hours of service annually.

Sonoma County Transit is the major intercity operator in the County, serving the communities of Cloverdale, Healdsburg, Santa Rosa, Sebastopol, Rohnert Park, Cotati, Petaluma, Sonoma, and other small towns within Sonoma County. The 18 local routes operate on 30- to 60-minute headways in the peak, and 60- to 120-minute headways in the off-peak period, and annually provide approximately 1,088,000 revenue vehicle miles and 62,600 revenue vehicle hours of service.

City of Napa's transit service, the V.I.N.E., provides fixed route service in the city of Napa and surrounding unincorporated areas. The V.I.N.E. operates seven routes with 30- to 60-minute headways, operating 353,000 annual revenue vehicle miles and 27,000 annual revenue vehicle hours. The V.I.N.E. has coordinated transfers with Yountville's Bear Flag Express.

In addition to the above services, several smaller communities in the Northern Subarea offer dial-a-ride or paratransit services within their communities.

- Transfer Points

The following serve as key regional transfer points in the transportation system for the Northern Subarea:

- | | | |
|----------------------|---|---|
| <u>Marin County</u> | o | Larkspur Ferry Terminal |
| | o | Tiburon Ferry Terminal |
| | o | Sausalito Ferry Terminal |
| | o | San Rafael Transit Center |
| <u>Sonoma County</u> | o | Santa Rosa Transit Mall |
| | o | Santa Rosa Greyhound/Golden Gate Transit Terminal |
| | o | Santa Rosa Fairgrounds Park-and-Ride Lot |
| | o | Sonoma County Airport |
| | o | Petaluma (4th/C Streets) |
| <u>Napa County</u> | o | Napa City Pearl Street Bus Transfer Center |



Figure IV-13
MTS STREETS AND HIGHWAYS SYSTEM
Marin County (Northern Subarea)

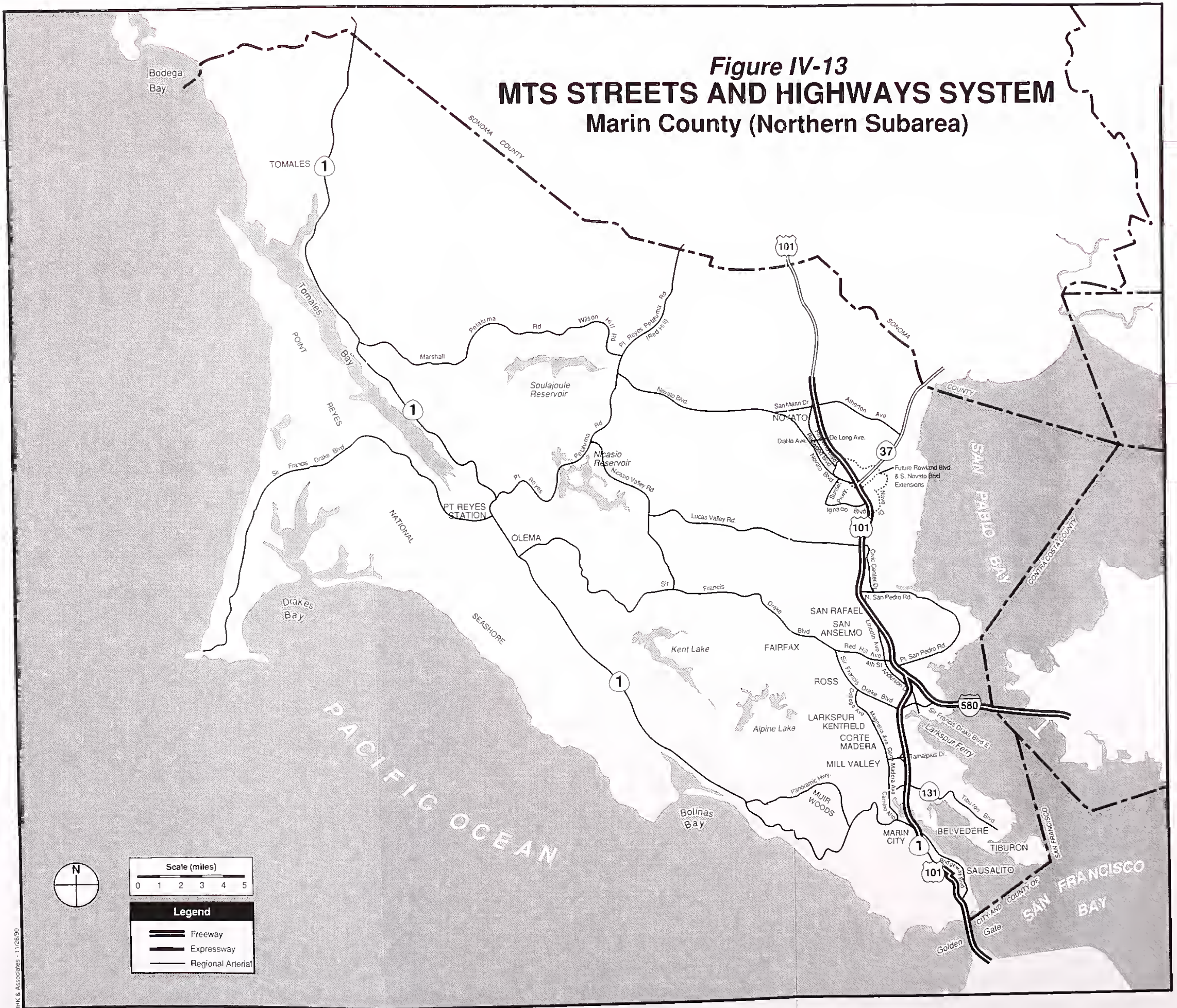






Figure IV-15
MTS STREETS AND HIGHWAYS SYSTEM
Napa County (Northern Subarea)





Figure IV-16
MTS TRANSIT CORRIDORS
Marin County (Northern Subarea)

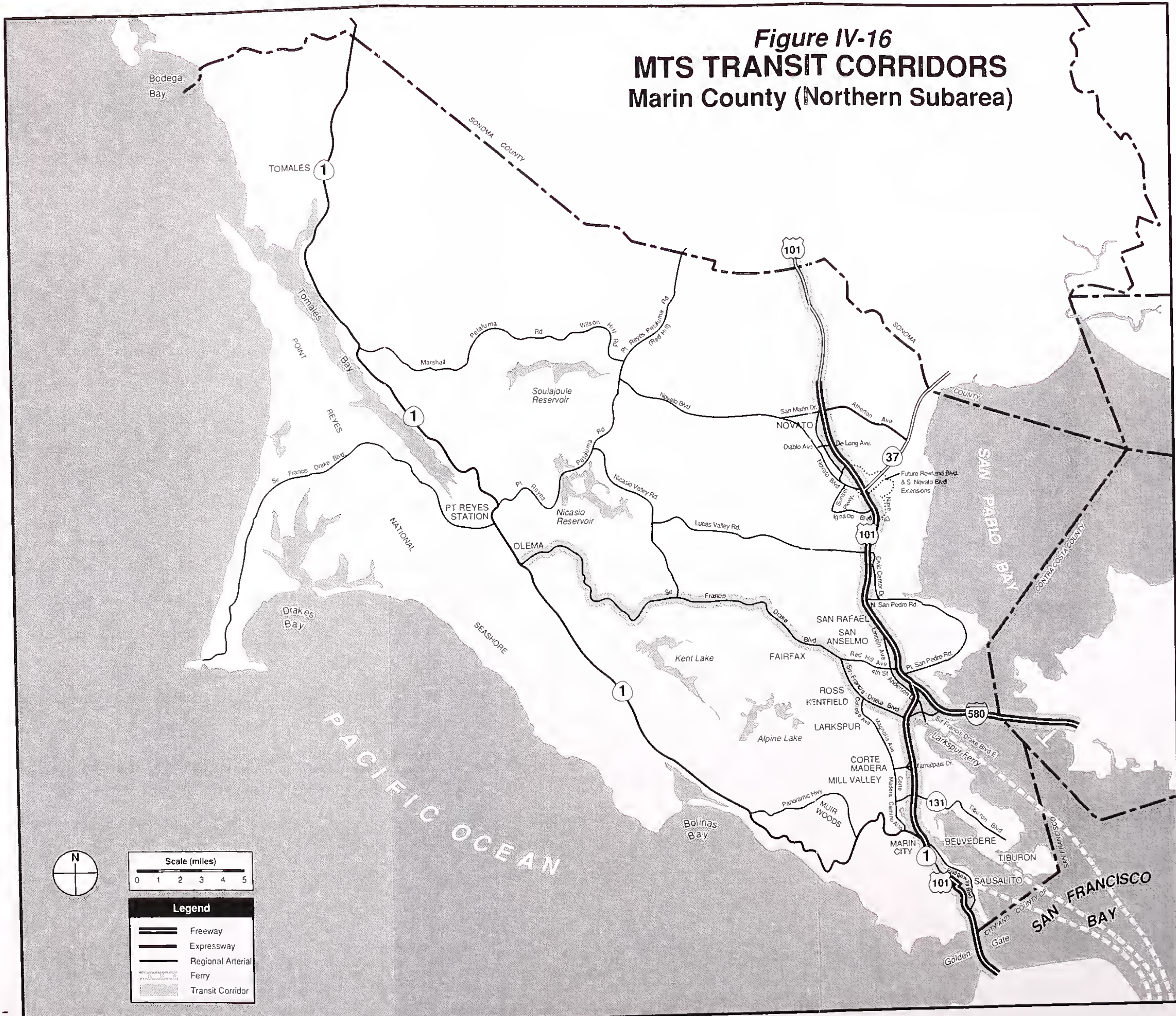
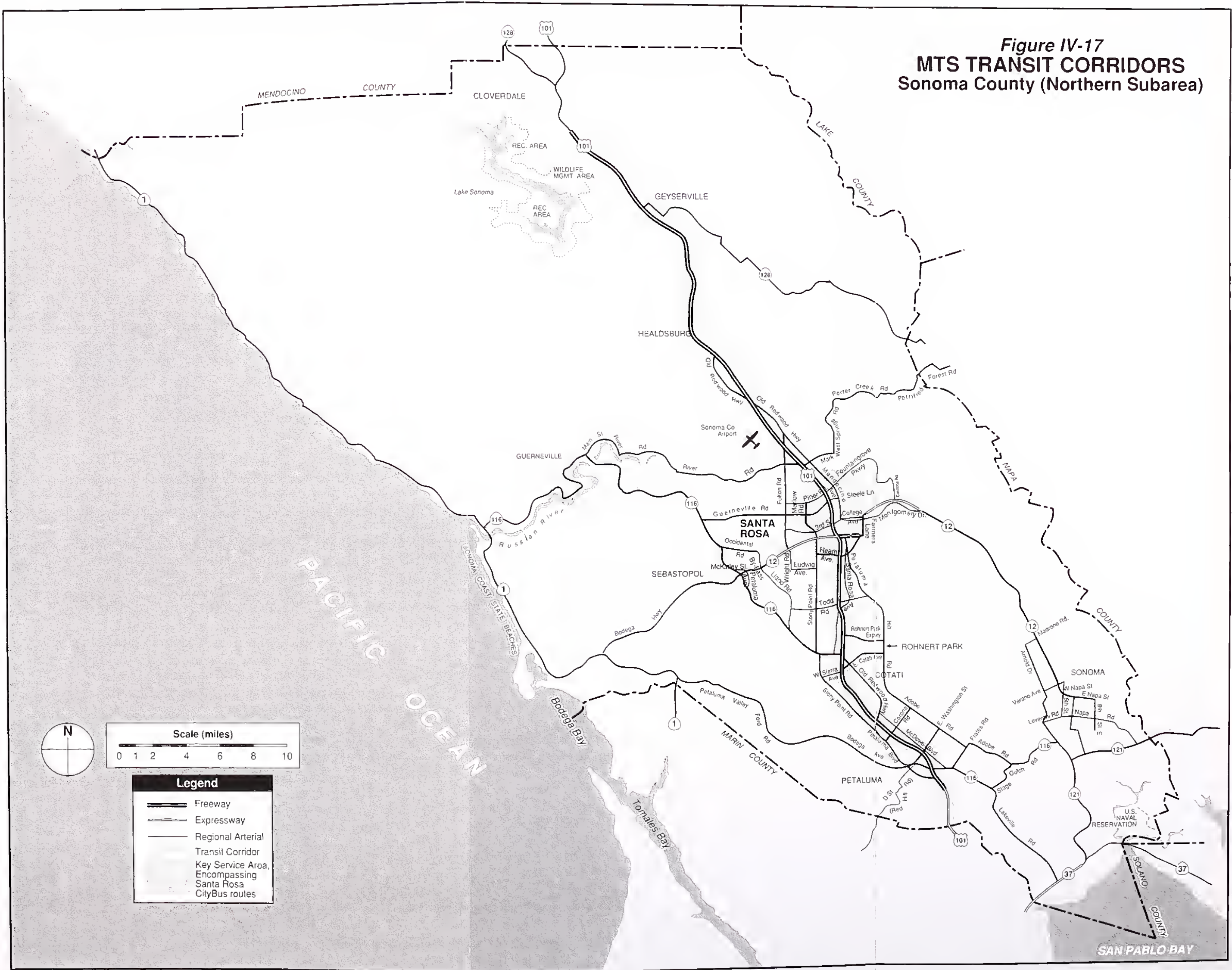




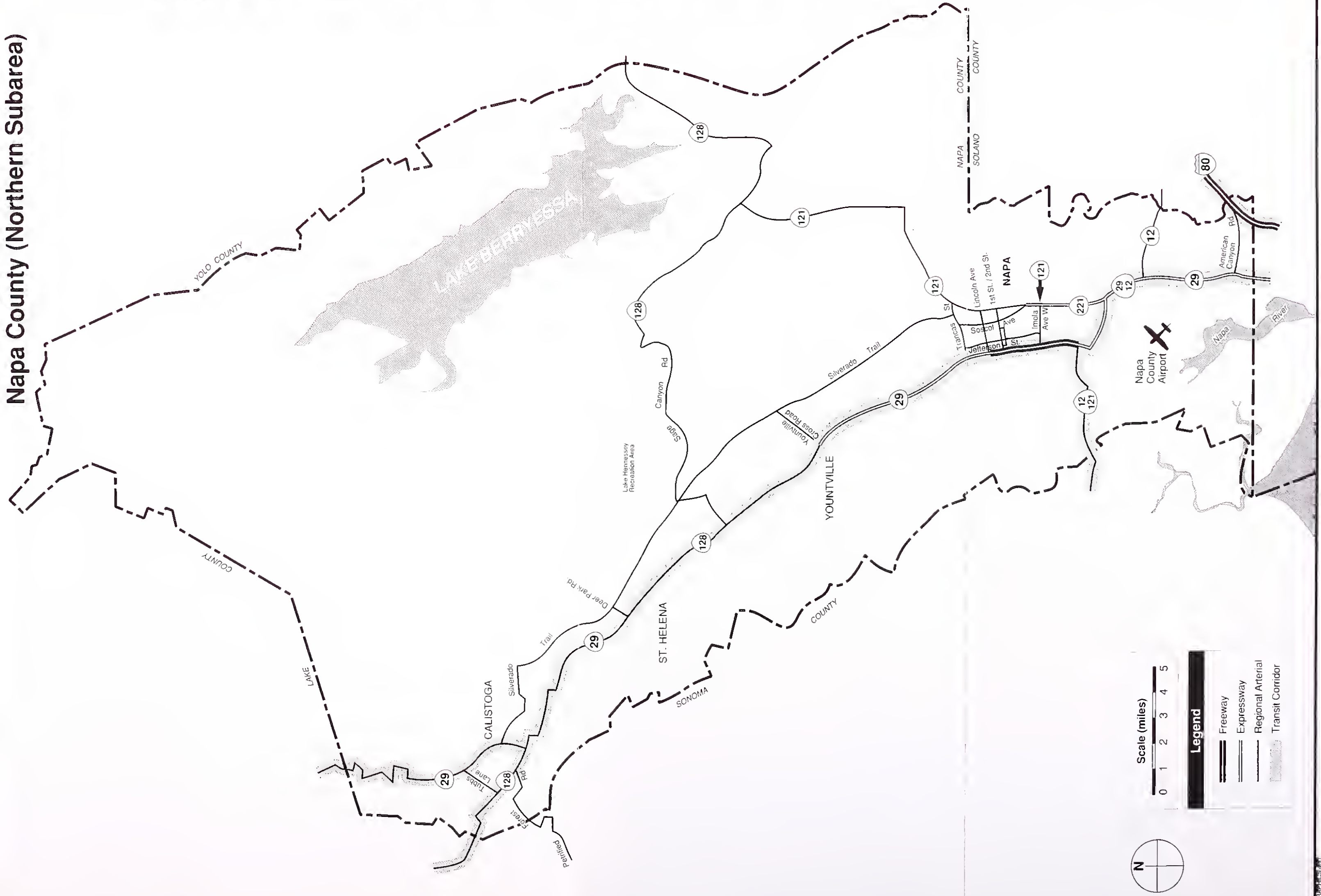
Figure IV-17
MTS TRANSIT CORRIDORS
Sonoma County (Northern Subarea)



MTG GRAPHICS rev. 8/91



Figure IV-18
MTS TRANSIT CORRIDORS
Napa County (Northern Subarea)



Scale (miles)
 0 1 2 3 4 5



Legend

- Freeway
- Expressway
- Regional Arterial
- Transit Corridor



CHAPTER IV:
ACTION ELEMENT

D. MTS ANALYSIS AND RECOMMENDATIONS

5. MTS System Analysis: Southern Subarea



5. MTS Systems Analysis: Southern Subarea

a. Subarea Description

The Southern Subarea consists of one county, Santa Clara, which occupies the southern one-fifth of the Bay Area. The major concentrations of developed land and population are located in the northern and northwestern portions of the subarea along the southern end of the Bay. San Jose is the dominant city with over 50 percent of the subarea's population and roughly 35 percent of its total jobs. Other significant cities include Sunnyvale, Mountain View, Palo Alto, and Santa Clara. The small, densely-developed swath of land between I-280 and the Bay is where one finds most of the subarea's population and employment. Most of the major cities in the Southern Subarea have experienced rapid growth since World War II, much of it driven by the high-technology industry boom that has given the northern portion of the subarea its nickname of "Silicon Valley". Significant in-commuting to Silicon Valley jobs occurs from San Mateo, Alameda, Santa Cruz, San Benito and Monterey counties and from as far east as San Joaquin and Stanislaus counties.

b. Demographics (1990-2010)

In 1990, the subarea had a population of approximately 1,460,000 and a total employment of approximately 880,000. ABAG Projections 90 estimates population growth between 1990 and 2010 of 14 percent and employment growth of 32 percent (this represents total population in 2010 of 1,670,000 and total employment of 1,150,000). In 1990, the Southern Subarea had approximately 50,000 more jobs than workers, making it a net importer of workers. This imbalance will increase steadily over the next 20 years. In 2010, the subarea is projected to have 190,000 more jobs than workers, placing increasing pressure on transportation arteries connecting the subarea with other parts of the Bay Region, as well as counties outside the region.

c. Current System Description (1990)

- Freeway and Highway System

The primary highways in this subarea are Route 101 (running northwest-to-southeast) and I-880/Route 17 (running north-to-south). Route 101 links the Southern Subarea with San Mateo County and San Francisco to the north, and San Benito and Monterey counties to the south. I-880 follows the east shore of the San Francisco Bay from Alameda County to the north and, as Route 17, connects the Bay Area with Santa Cruz County to the south. Increasing commuting from Santa Cruz into the Southern Subarea has made this route a major access point into the Bay Area.

I-280 also connects the Western and Southern subareas, paralleling Route 101 further inland from the Bay. In San Jose, I-280 bends to the northeast and connects with I-680 and Route 101. I-680

roughly parallels I-880, and links the Southern and Eastern subareas. Routes 152 and 25 in the southern portion of the subarea link the Bay Area with counties to the south; Route 152 goes to Santa Cruz and Merced counties, while Route 25 extends into San Benito County. Freeways within the subarea include Route 237 connecting Route 85, Route 101, and I-880; Route 85, linking Route 101 and I-280, with an extension planned to South San Jose; and Route 87, extending south from Route 101 into San Jose, also with a southerly extension planned. Several county expressways are also an integral part of the transportation system, including Central, Lawrence, Montague, San Tomas, Almaden, and Capitol.

Figures IV-19 and IV-20 depict both major highways and important arterials in this subarea.

- Transit System

The major transit operators serving the Southern Subarea are:

- o Santa Clara County Transit District (SCCTD)
- o CalTrain
- o Amtrak

Major corridors of transit service throughout the subarea are highlighted in Figures IV-21 and IV-22.

- o SCCTD is by far the largest provider in this area. Service includes local and express service on major arterials, and express service on arterials, freeways and expressways throughout the county. The major north-south service routes include Route 101, I-280, I-880, El Camino Real, the East San Jose Corridor, and the Almaden Expressway, among others. Major east-west service routes include Route 237, Route 17, and Lawrence Expressway, as well as other service corridors.

SCCTD operates a total of 61 local and 22 express routes per day which annually account for approximately 1.54 million revenue vehicle hours and 23.08 million revenue vehicle miles. Route headways range from 10 to 60 minutes during the peak hours and 15 to 70 minutes midday and night. Express service runs during peak hours in the peak direction only. SCCTD operates a 22-mile light rail transit system, with service from South San Jose to Santa Clara. Headways are 10 minutes, with 15-minute headways nights, Sundays and holidays.

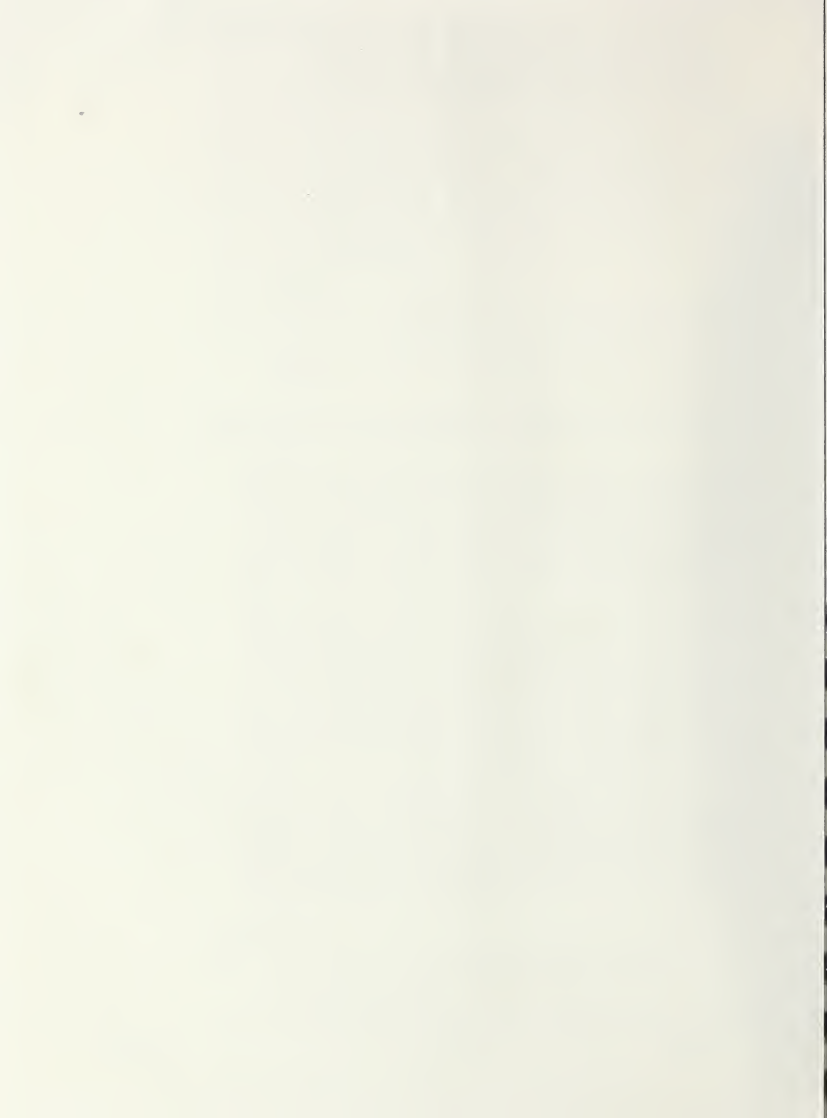
- o CalTrain service begins at Cahill Station in San Jose, extending north to downtown San Francisco. 54 trains each weekday stop at 26 stations, 10 of which are in the Southern Subarea. CalTrain service has 727,000 annual train miles and 72,500 car hours. Route headways range from 4 to 30 minutes during peak hours (in the peak direction) and 1 to 2 hours midday, evenings, and weekends.

- Transfer Points

Major transfer points in the Southern Subarea include:

- o San Jose Transit Mall
- o CalTrain Stations (Cahill [San Jose], Palo Alto, Sunnyvale)

- o Santa Clara Light Rail System (Guadalupe Corridor Stations, Tamien [Alma St.], Santa Teresa)
- o Weller/Main Bus Transit Center
- o Eastridge Bus Transit Center
- o San Jose International Airport



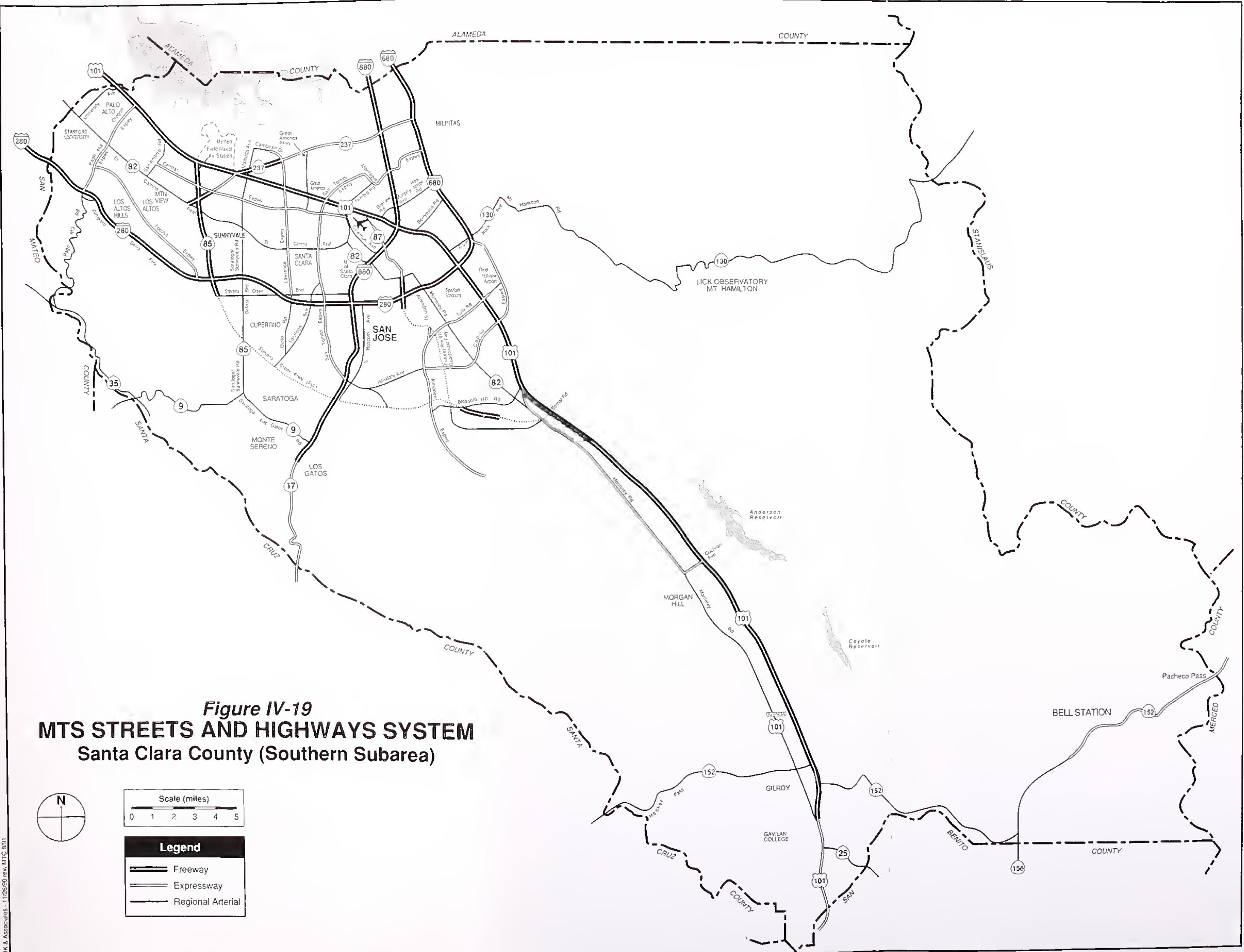
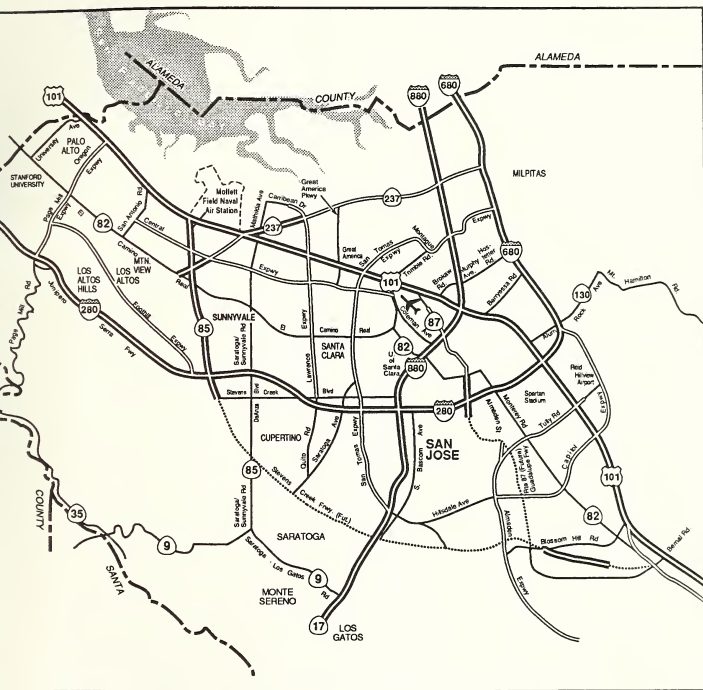


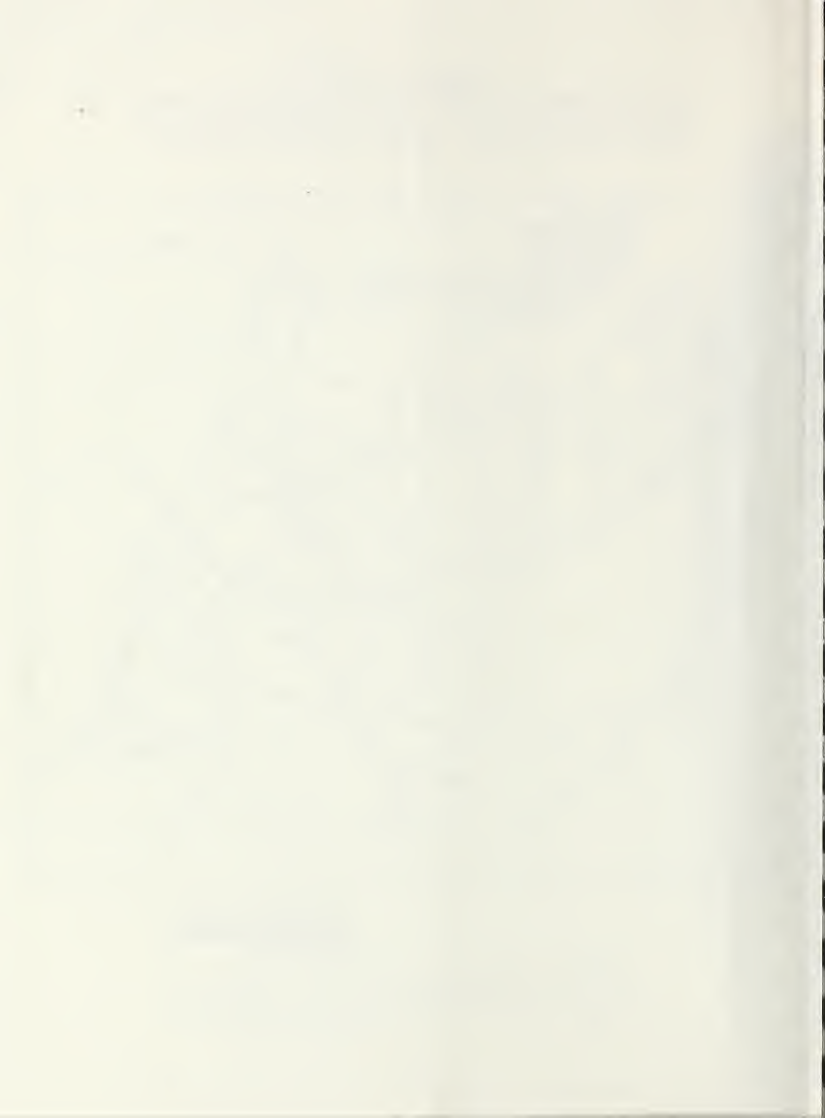
Figure IV-19
MTS STREETS AND HIGHWAYS SYSTEM
 Santa Clara County (Southern Subarea)

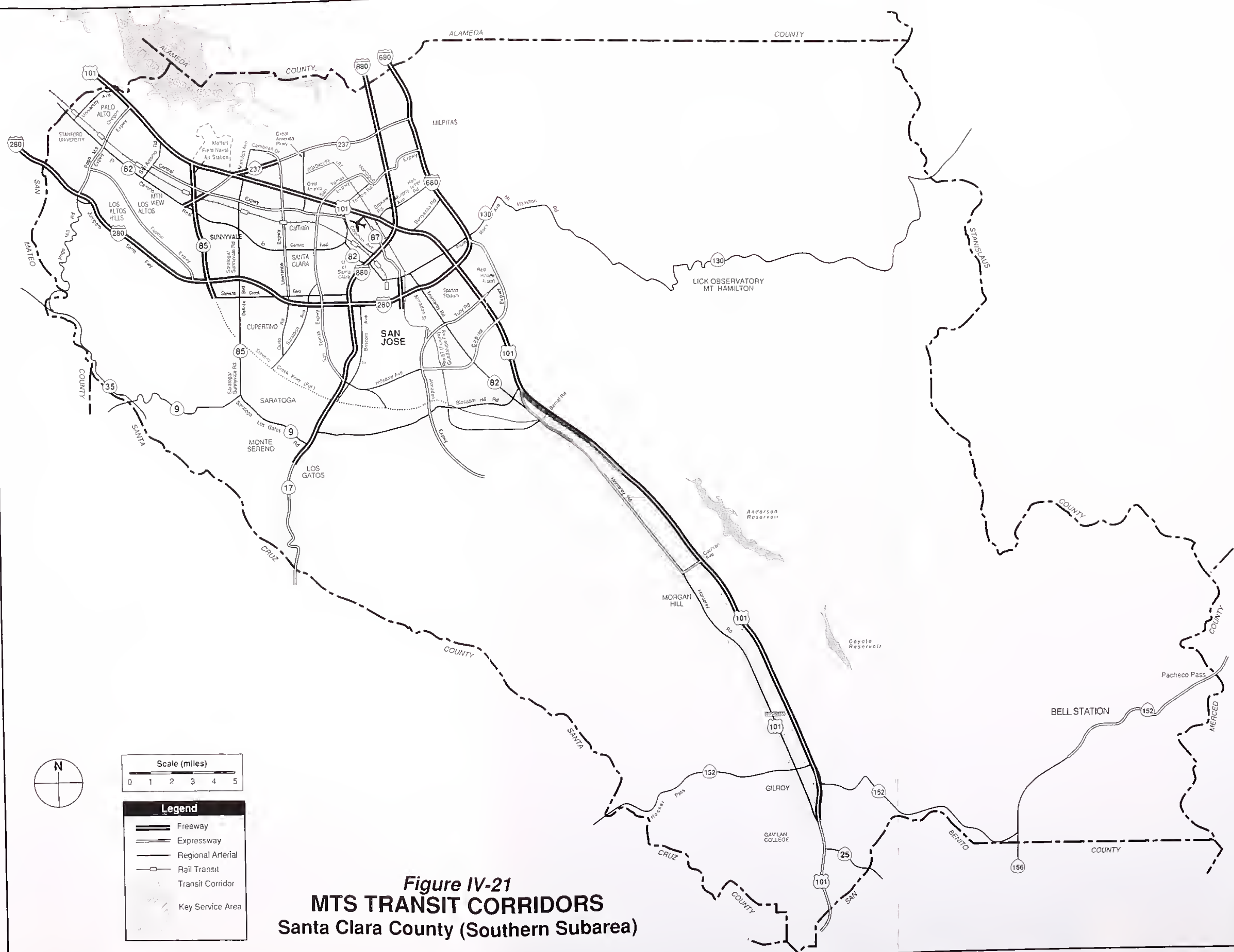


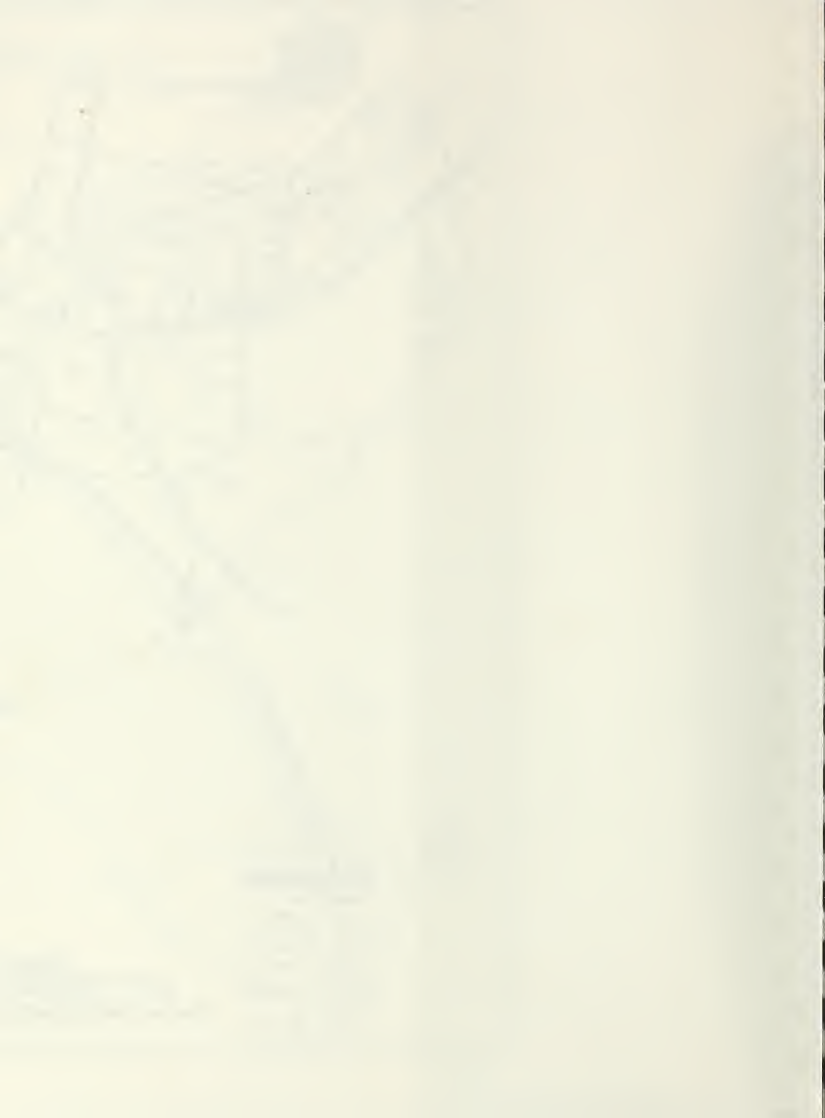
Figure IV-20
MTS STREETS AND HIGHWAYS SYSTEM
Santa Clara County - Detail (Southern Subarea)

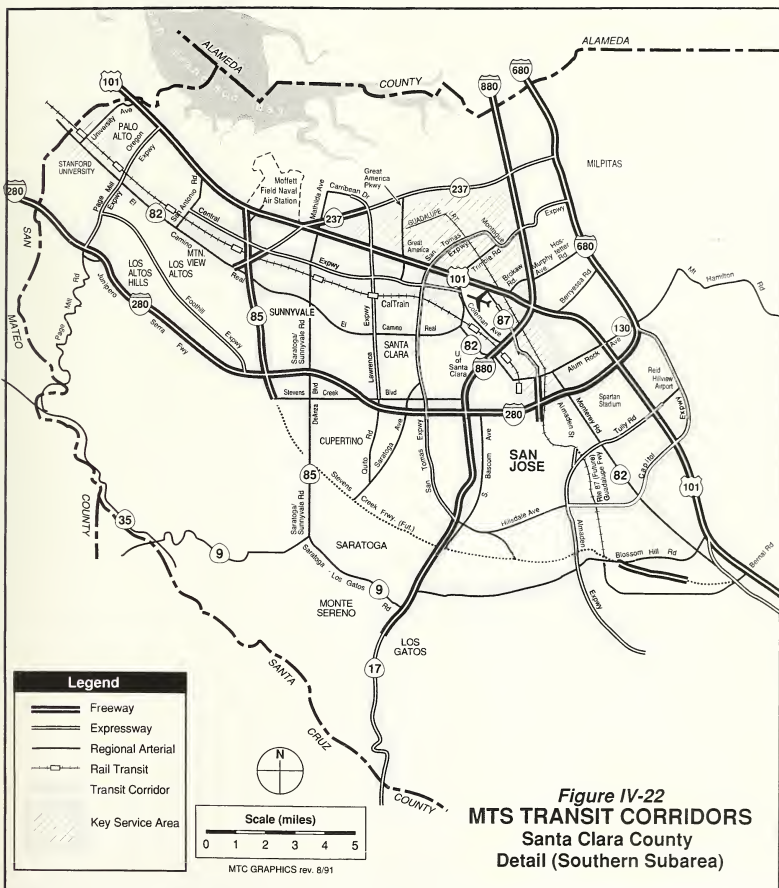


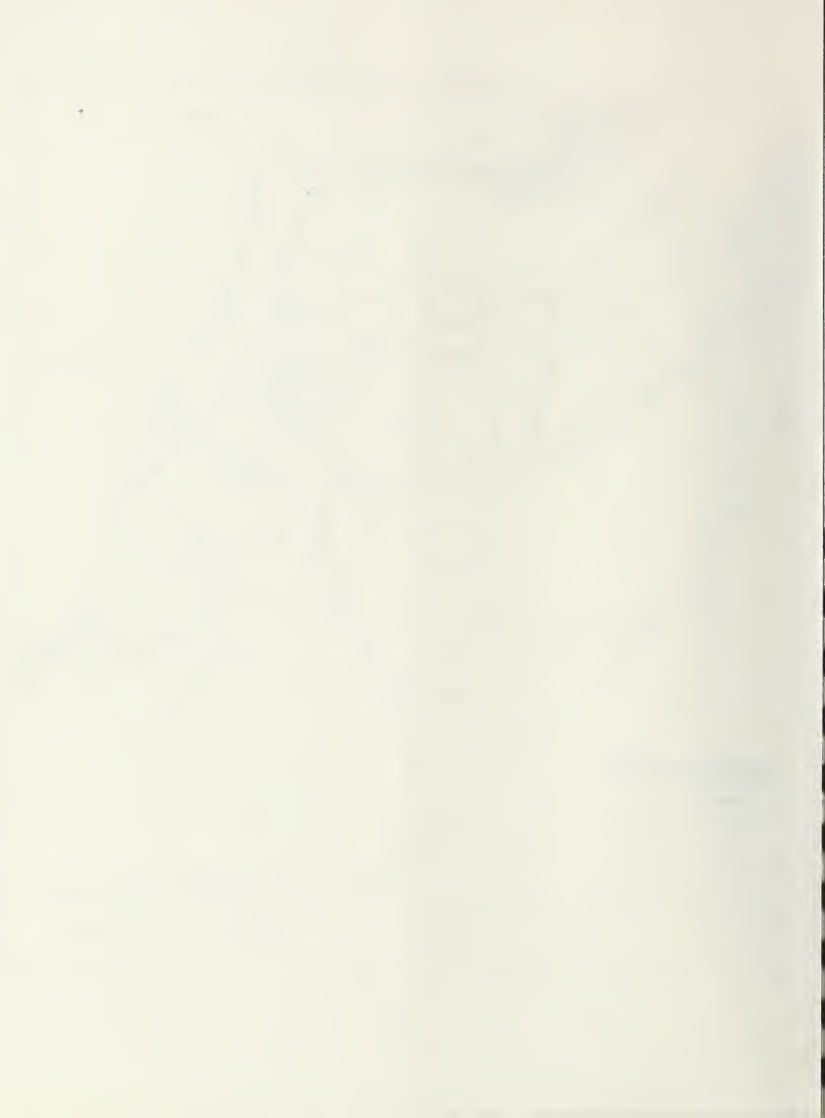
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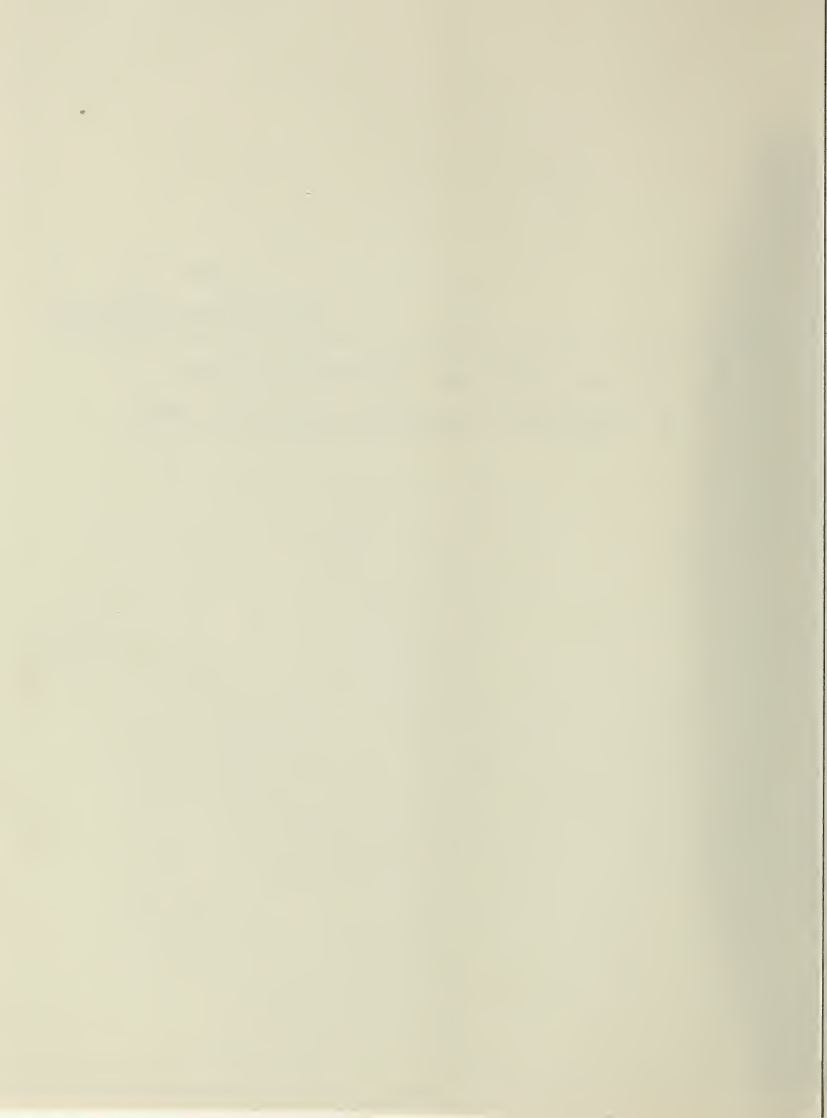




CHAPTER IV:
ACTION ELEMENT

D. MTS ANALYSIS AND RECOMMENDATIONS

6. MTS Future Improvement Options for 2010



6. MTS Future Improvement Options for 2010

As outlined in the Chapter IV.D.1 "Introduction," this Regional Transportation Plan recommends that future improvements to the Metropolitan Transportation System be separated in two "tiers." Tables IV-2, IV-3, IV-4 and IV-5 outline both the existing highway, transit and transfer facilities, and two tiers of improvements, arrayed by the Eastern, Western, Northern, and Southern subareas. Table information includes the following:

Column one:

Identifies the pertinent highway route, transit service, or transfer point.

Column two:

Identifies existing facilities or services.

Column three:

To develop a responsive and comprehensive long range transportation strategy, this Regional Transportation Plan incrementally builds on the body of technical findings and conclusions included in the RTP Environmental Impact Report, as explained in the following process. The RTP first identifies those projects currently programmed in the 1992-96 Transportation Improvements Program (TIP), adopted by the Commission in September 1991. These projects are a base of initial improvements that would form the foundation of a 20 year regional plan. Given their funding commitments, they are likely to be implemented in the future, as long as they satisfy other required tests of feasibility. For example:

- o Projects that are only partially funded must secure full funding.
- o Projects must satisfy all necessary project level environmental requirements; in particular, capacity-expanding highway projects must meet all conformity requirements under the federal Clean Air Act.

Column four:

The RTP then recommends a broad set of options for the year 2010 that are not assumed at this juncture to be part of the Regional Transportation Plan. The list consists of the numerous improvements examined as part of the Transit Capacity, Highway Capacity, and/or Transit/Highway Blend DEIR transportation alternatives, as well as projects suggested during the Draft RTP public review and comment period. These options represent a wide range of improvements the Commission may want to consider, among others, as part of the 1992 RTP Update. In the chart, these projects and services have a notation indicating whether they are assumed in the Transit Capacity ("T"), Highway Capacity ("H"), or Transit/Highway Blend ("B") EIR alternatives, or whether they were suggested during the RTP public review period ("C").

The Commission will examine the mobility, environmental and other impacts of these projects, and recommend a set for inclusion in the next RTP Update. In doing so, the Commission will focus on developing a long-range transportation plan that achieves the policies set out in the Preface to this document.

TABLE IV-2 Eastern Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
a. I-80: (Alameda and Contra Costa Counties)	<ul style="list-style-type: none"> 6 to 10 lane freeway (with 2 HOV lanes on approaches to SFOBB) in Alameda County, and 6 lane freeway in Contra Costa County Add EB auxiliary lane from Applian Way to Pinole Valley Road (EI Sobrante) 	<ul style="list-style-type: none"> Widen to 8 lanes (including 2 HOV lanes) from Atlas Rd. to Contra Costa County line # (The Commission supports extension of this project to Willow Ave.) Widen to 10 lanes (including 2 HOV lanes) from Contra Costa County line to Powell St. and extend WB HOV lane to existing HOV approach at West Grand # Build direct HOV ramps at Atlas and Cutting # Construct or modify additional interchanges and overcrossings as appropriate. # Meter flows on metropolitan gateways (Carquinez Bridge, Route 4, Knox Freeway, and Distribution Structure) and interchange on-ramps in conjunction with transit improvements. 	<ul style="list-style-type: none"> Widen to 8 lanes (including 2 HOV lanes) from Carquinez Bridge to Willow (H) Add EB HOV lane from Bay Bridge to Powell St. (Emeryville). (B) (H) Add direct HOV access ramps in Berkeley (B) (H) Implement the "Gateway" concept on I-80. (C)
b. I-80: (Solano County)	<ul style="list-style-type: none"> 4 to 8 lane freeway 	<ul style="list-style-type: none"> Widen to 8 lanes from I-505 to Meridian Rd. (Vacaville) # Expand and reconstruct Green Valley Rd. overcrossing (Cordella) # Expand and reconstruct West Texas interchange (Fairfield) # Construct or modify additional interchanges and overcrossings as appropriate. # 	<ul style="list-style-type: none"> Widen to 8 lanes from Vallejo to Yolo County Line (10 lanes including 2 HOV lanes in Fairfield); install HOV lanes in Vallejo (B)(H)

Funding Relationships

- # RTP/TIP
0 Special Funding (Sales Tax, Measure 1, Earthquake Relief, Local Funds)

RTP-EIR Relationships

- (B) Blend Alternative
(H) Highway Capacity
(C) Added as a result of public and Commission comment

TABLE IV-2
Eastern Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
c. I-880: (Alameda County)	<ul style="list-style-type: none"> 4 to 8 lane freeway Construct interchange at I-880/I-238 (Hayward) Increase capacity of I-580/I-238 interchange (Hayward) Widen I-880 (San Leandro to Union City) <ul style="list-style-type: none"> to 10 lanes from Rte 112 to Rte 238 (including 2 auxiliary lanes) to 12 lanes from Rte 238 to Rte 92 (including 2 auxiliary lanes and 2 HOV lanes) to 10 lanes from Rte 92 to Alvarado/Niles Rd. (including 2 HOV lanes) 	<ul style="list-style-type: none"> Reconstruct Cypress structure on new alignment as a 6-lane freeway from I-980 to Grand, with connectors to Bay Bridge and I-80 Widen to 6 lanes from Rte 262 to Montague Expressway #0 Widen to 8 lanes (including 2 HOV lanes) from Alvarado/Niles Rd. to Santa Clara County line #0 Modify interchanges at Dixon Landing Rd., Durham Rd., Stevenson Blvd., Mowry Ave., Thornton Ave., Alvarado-Fremont Blvd., Rte 92, 98th Ave., and Hegenberger Rd. #0 Widen and modify additional interchanges and overcrossings as appropriate. #0 	<ul style="list-style-type: none"> Widen to 10 lanes from Rte 262 to Montague Expressway. (H) Construct direct HOV ramps from SB I-880 to WB Rte 92 and NB I-880 to WB Rte 92. (H)
d. I-580: (Alameda County)	<ul style="list-style-type: none"> 6 to 8 lane freeway 	<ul style="list-style-type: none"> Reconstruct I-580/I-80 interchange # Upgrade I-580/I-680 interchange connectors [Pleasanton/Dublin]#0 Construct connections to new Route 238# Construct or modify additional interchanges and overcrossings as appropriate. # 	<ul style="list-style-type: none"> Add HOV lane from Rte 24 to Bay Bridge (B) (H) Provide slow vehicle lanes over Alamo Pass on I-580. (C)

Funding Relationships

RTIP/TIP

0 Special Funding (Sales Tax, Measure 1, Earthquake Relief, Local Funds)

RTP-EIR Relationships

(B) Blend Alternative
(H) Highway Capacity Alternative
(C) Added as a result of public and Commission comment

**TABLE IV-2
Eastern Subarea Transportation System**

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
e. I-680: (Alameda and Contra Costa Counties)	<ul style="list-style-type: none"> 4 to 10 lane freeway Widen to 6 lanes from the Benicia Bridge to Willow Pass Rd. Widen to 10 lanes from Willow Pass Rd. to Boyd Rd. (Concord) Widen to 5 lanes NB and 6 lanes SB from Boyd Rd. to Treat Blvd. (Walnut Creek) Widen to 5 lanes NB from Treat Blvd. to Rte 24 (Walnut Creek) Widen to 5 lanes NB and 6 lanes SB from Rte 24 to Rudgear Rd. (Walnut Creek) Widen to 6 lanes from I-580 to Rte 238/Mission Blvd. (Fremont) Widen all connectors at the I-680/Rte 24 interchange to 3 lanes (Walnut Creek) 	<ul style="list-style-type: none"> Widen to 8 lanes (including 2 HOV lanes) from Rudgear Rd. to I-580 (San Ramon Valley)# Construct new overcrossing at Fosterla Way#0 Construct or modify additional interchanges and overcrossings as appropriate. # 	<ul style="list-style-type: none"> Widen to 8 lanes (including 2 HOV lanes) from Benicia Bridge to Willow Pass Rd. (Concord) (H) Construct a full I-680/Rte 4 interchange (Concord) (H) Widen to 10 lanes (with auxiliary and HOV lanes) from El Cerrito Blvd. to Bollinger Canyon Rd. (San Ramon) (B)(H)
f. I-680: (Solano County)	<ul style="list-style-type: none"> 4 lane freeway 		<ul style="list-style-type: none"> Widen to 6 lanes (including 2 HOV lanes) from I-50 to the Benicia-Marinez Bridge (B)(H); then widen to 8 lanes (H) Widen to 6 lanes from I-880 to I-580 [Hayward] (B)(H)
g. I-238: (Alameda County)	<ul style="list-style-type: none"> 4 lane freeway 		
h. I-980: (Alameda County)	<ul style="list-style-type: none"> 4 to 6 lane freeway 		
i. I-780: (Solano County)	<ul style="list-style-type: none"> 4 lane freeway 		<ul style="list-style-type: none"> Widen to 6 lanes from I-80 to I-680 [Vallejo/Benicia] (B)(H) Widen to 6 lanes [Concord] (B)(H)
j. Rte 242: (Contra Costa County)	<ul style="list-style-type: none"> 4 lane freeway 		

Funding Relationships
 # RTIP/TIP
 0 Special Funding (Sales Tax, Measure 1, Earthquake Relief, Local Funds)

RTP-EIR Relationships
 (B) Blend Alternative
 (H) Highway Capacity Alternative
 (C) Added as a result of public and Commission comment

TABLE IV-2
Eastern Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
k. Rte 4: (Contra Costa County)	<ul style="list-style-type: none"> 2 to 4 lane highway/freeway 	<ul style="list-style-type: none"> Widen to 6 lanes from Willow Pass Rd. to Bailey Rd. (West Pittsburg)#0 Modify Rte 4/Bailey Rd. interchange. #0 Construct or modify additional interchanges and overcrossings as appropriate. #0 	<ul style="list-style-type: none"> Widen to 4 lanes from I-80 to Cummings Skyway (Hercules)(B) Construct new 4 lane Brentwood Bypass from Rte 160 to south of Balfour Rd.(B)(H); then widen to 8 lanes (H) Widen to 8 lanes (including 2 HOV lanes) from Rte 242 to Bailey Rd. (H) Widen to 6 lanes (including 2 HOV lanes) from Bailey Rd. to Hillcrest Ave. (H) Widen to 6 lanes from Hillcrest Ave. to Rte 160. (H) Widen Rte 4 to 8 lanes (including 2 HOV lanes) from Bailey Rd. to Rte 160. (C)
l. Rte 12: (Solano County)	<ul style="list-style-type: none"> 2 lane highway to 4 lane expressway 	<ul style="list-style-type: none"> Widen to 4 lane expressway from Marina Blvd. to Scandia Rd. (Suisun City)#0 	<ul style="list-style-type: none"> Widen to a 4 lane expressway from Rte 29 to I-80 (B)(H) Widen (or add passing lanes) from Suisun City to Rio Vista. (C)
m. Rte 13: (Alameda County)	<ul style="list-style-type: none"> 4 lane freeway 	<ul style="list-style-type: none"> Modify SB 13 and new EB 24/SB 13 ramp and NB 13/WB 24 ramp at Rte 13/24 interchange (Berkeley)#0 	
n. Rte 24: (Alameda and Contra Costa Counties)	<ul style="list-style-type: none"> 6 to 8 lane freeway 	<ul style="list-style-type: none"> Provide HOV access (WB) from St. Stephens Drive (Orinda) to eastern portal of Caldecott Tunnel# 	<ul style="list-style-type: none"> Construct 4th bore through Caldecott Tunnel (total of 10 lanes including 2 HOV lanes) (H) Add HOV lane from College Avenue to Caldecott Tunnel (Oakland) (B) (H)

Funding Relationships

RTP/TIP
 0 Special Funding (Sales Tax, Measure 1, Earthquake Relief, Local Funds)

RTP-EIR Relationships

(B) Blend Alternative
 (H) Highway Capacity Alternative
 (C) Added as a result of public and Commission comment

TABLE IV-2
Eastern Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
o. Rte 61: (Alameda County)	<ul style="list-style-type: none"> 2 to 4 lane arterial (Doolittle Drive) [Alameda] 	<ul style="list-style-type: none"> Widen to 4 lanes from Harbor Bay Parkway to Island Drive# Construct Rte 61 as 4-lane facility from Maitland Drive to 98th Avenue (Cross-Airport Roadway) #0 	<ul style="list-style-type: none"> Construct new Rte 61 - 6 lane expressway/freeway from I-80 to Rte 237 (Milpitas) (Caltrans Nimitz/Rte 61 Demonstration Project Study) (H)
p. Rte 84: (Fremont)	<ul style="list-style-type: none"> 4 lane arterial (Thornton Ave.) 	<ul style="list-style-type: none"> Construct new 6 lane expressway from Rte 238 to I-880. #0 	
q. Rte 84: (Contra Costa and Alameda Counties)	<ul style="list-style-type: none"> 2 lane highway 4 lane arterial (Livermore, Fremont) 	<ul style="list-style-type: none"> Extend Rte 84 as a 2 lane expressway along Isabel Ave. from I-580 to Vallecitos Rd. (Livermore) #0 	<ul style="list-style-type: none"> Construct new 4-lane expressway (near Rte 84) east of current Vasco Rd. alignment from I-580 to Rte 113 (near Collinsville, Solano County) (H) Relocate and straighten Vasco Rd. alignment, with no widening (B)
r. Rte 37: (Solano County)	<ul style="list-style-type: none"> 2 lane highway to 4 lane expressway Widen to 4 lane freeway from Sage St. to Mini Dr. 		<ul style="list-style-type: none"> Widen to 4 lane freeway from Diablo St. to the Napa River Bridge (B) (H)
s. Rte 113: (Solano County)	<ul style="list-style-type: none"> 2 lane highway 		<ul style="list-style-type: none"> Widen to 4 lane expressway from I-80 to Dixon (B)(H) Construct new 4 lane expressway from Dixon to Rte 84 near Brentwood (Contra Costa County) (H)

Funding Relationships

RTIP/TIP

0 Special Funding (Sales

Relief, Local Funds)

Tax, Measure 1, Earthquake

(C) Added as a result of public and Commission comment

RTP-EIR Relationships

(B) Blend Alternative

(H) Highway Capacity

(C) Added as a result of public and Commission comment

TABLE IV-2
Eastern Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
<p>t. Rte 238: (Alameda County)</p>	<ul style="list-style-type: none"> 4 lane arterial 	<ul style="list-style-type: none"> Construct 4 lane expressway from I-580 to Harder (Hayward Bypass) #0 Widen to 6 lane expressway from Industrial Parkway to Perilla Avenue/Rte 84 (Union City) #0 	<ul style="list-style-type: none"> Widen to 6 lanes from Rte 84 (Union City) to I-680 (Fremont) (H) Upgrade 4-lane expressway from I-580 to Harder to 4-lane freeway (B) (H) 0 Construct 4-lane expressway from Harder to Industrial Parkway. (B) (H) Upgrade 4 lane expressway from Harder to Industrial Parkway to 4 lane freeway (B) (H) 0 Upgrade Hayward Bypass (I-580 to Industrial Parkway) from 4 lane freeway to 6 lane freeway. (H) 0 Construct Rte 238 as a freeway from Rte 84 (Union City) south to I-680 (Fremont) (C)
<p>u. Rte 262: (Alameda County)</p>	<ul style="list-style-type: none"> 2 to 4 lane arterial 		<ul style="list-style-type: none"> Widen to 6 lanes from I-880 to I-680 (Fremont) (B)(H)
<p>v. Hayward-San Mateo Bridge and approaches (Rte 92)</p>	<ul style="list-style-type: none"> 4 lane freeway (4-6 lane bridge), plus WB HOV lane from Clawler Rd. to Toll Plaza 	<ul style="list-style-type: none"> Widen to 6 lanes (including WB HOV lane) from I-880 (Hayward) to toll plaza. #0 	
<p>w. Carquinez Bridge (I-80) and approaches</p>	<ul style="list-style-type: none"> 6 to 8 lanes (6 lane bridge) 		<ul style="list-style-type: none"> Replace western span (5 lanes) 0 (H) Replace western span; provide capacity expansion only for transit and HOV in accordance with "Gateway" concept 0 (C) Add new approaches to the Carquinez Bridge (C)

Funding Relationships

RTIP/TIP

0 Special Funding (Sales Tax, Measure 1, Earthquake Relief, Local Funds)

RTP-EIR Relationships

(B) Blend Alternative

(H) Highway Capacity Alternative

(C) Added as a result of public and Commission comment

TABLE IV-2
Eastern Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
x. Benicia-Martinez Bridge and approaches (I-680)	<ul style="list-style-type: none"> 4 to 5 lanes Widen bridge to 6 lanes 	<ul style="list-style-type: none"> Construct a second bridge span for a total of 10 lanes and modify approaches #0 	<ul style="list-style-type: none"> Add new approaches to the Benicia-Martinez Bridge (C)
y. Antioch Bridge and approaches (Rte 160)	<ul style="list-style-type: none"> 4 lane freeway (2 lane bridge) 		<ul style="list-style-type: none"> Construct new span (total of 6 lanes) (H)
z. Richmond-San Rafael Bridge and approaches (I-580)	<ul style="list-style-type: none"> 6 lane facility, with 6 lane approaches (HOV segments) Complete Knox Freeway from Cutting Blvd. to Scotfield Ave. in Richmond (6 lanes including 2 HOV lanes) 	<ul style="list-style-type: none"> Construct North Richmond Bypass (Rte 93) from Bridge to I-80 (4 lane expressway) #0 	
z-1 Dumbarton Bridge and approaches (Rte 84) (see Western Subarea)	<ul style="list-style-type: none"> 4 to 6 lanes (4 lane bridge) Widen to 6 lanes (including WB HOV lane) from Newark Blvd. to Bridge 		
z-2 San Francisco Oakland Bay Bridge and approaches (I-80)	<ul style="list-style-type: none"> 10 lane facility 		

Funding Relationships
 # RTIP/TIP
 0 Special Funding (Sales Tax, Measure 1, Earthquake Relief, Local Funds)

RTP-EIR Relationships
 (B) Blend Alternative
 (H) Highway Capacity
 (C) Added as a result of public and Commission comment

TABLE IV-2
Eastern Subarea Transportation System

B. Transit

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
a. AC Transit	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> 76 fixed routes, and 6 express routes in western Alameda and Contra Costa counties 20 transit routes (Bay and Dumbarton bridges) Comprehensive Service Plan (CSP) (Phase II) 	<ul style="list-style-type: none"> Implement CSP, Phases I and III, including construction of 12 new transfer centers # 	<ul style="list-style-type: none"> Implement CSP, Phases IV and V, including 9 transfer centers (B)(T) Provide additional/upgraded service to Amtrak and BART stations and to ferry terminals (B)(T) Upgrade headways (B)(T) Operate a new LRT system on San Pablo Ave./East 14th Street between El Cerrito del Norte BART station and Hayward Bayfair BART station (5 minute peak period headways; 10 minute mid-day headways) (T)

Funding Relationships

RTIP/TIP

0 Special Funding (Eligible for Propositions 108/116, Other Sales Tax)

* MTC Resolution 1876 (Projects in Tier 1, or under way, shown.*1)

RTP-EIR Relationships

(B) Blend Alternative

(T) Transit Capacity Alternative

(C) Added as a result of public and Commission comment

TABLE IV-2
Eastern Subarea Transportation System

B. Transit

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
b. BART (see Western and Southern Subareas)	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> Rail service between Richmond - Fremont Richmond-SF/Daly City Concord-SF/Daly City Fremont-SF/Daly City 34 stations Express bus service to Pittsburg/Antioch, Livermore, Martinez, Pinole and Hercules 	<ul style="list-style-type: none"> Extend basic rail service as follows: <ul style="list-style-type: none"> Concord to West Pittsburg (2 stations) #*10 Hayward to Dublin (2 stations) #*10 Fremont to Warm Springs (2 stations) #*10 	<ul style="list-style-type: none"> Extend BART rail service as follows: <ul style="list-style-type: none"> West Pittsburg to East Antioch (3 stations) (B)(T) *0 Dublin to East Livermore (3 stations) (B)(T) *0 Warm Springs to San Jose (7 stations) (B)(T) *0 Richmond to Hercules (4 stations) (T) *0 Discontinue compelling BART express bus service in rail corridors with extension of rail service (B)(T) Construct Oakland Airport connector (B)(T) *0

Funding Relationships

- # RTP/TIP
- 0 Special Funding (Eligible for Propositions 108/116, Other Sales Tax)
- * MTC Resolution 1876 (Projects in Tier 1, or under way, shown-*1)

RTP-EIR Relationships

- (B) Blend Alternative
- (T) Transit Capacity
- (C) Added as a result of public and Commission comment

TABLE IV-2
Eastern Subarea Transportation System

B. Transit

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
c. Amtrak (see Southern Subarea)	<ul style="list-style-type: none"> No intra-regional service 	<ul style="list-style-type: none"> Provide service between Sacramento and San Jose: <ul style="list-style-type: none"> 10 daily round trips stations at Suisun City, Martinez, Richmond, Berkeley, West Oakland, Jack London Square, Coliseum, Hayward and Fremont/Newark operate at 79 mph #0 	<ul style="list-style-type: none"> Increase service to provide: <ul style="list-style-type: none"> 14 round trips daily (10 local, 4 express) new stations at Dixon, Vacaville, Elmira, Crockett, and Pinole Speeds of 79 mph (B)(T), then Increase service to provide: <ul style="list-style-type: none"> 24 round trips daily (20 local, 4 express) no new stations electrify system speeds of 125 mph (T) Initiate high-speed rail between the Bay Area and Sacramento. (C) Extend CalTrain from downtown San Jose to Fremont. (C)
d. Contra Costa County Transit Authority (CCCTA)	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> 24 bus routes offering local and express service to central Contra Costa County and San Ramon Valley 	<ul style="list-style-type: none"> Basic System 	<ul style="list-style-type: none"> Upgrade service on existing routes serving Martinez Amtrak station, UC Berkeley, and BART stations (B)(T) Add service in San Ramon/Bishop Ranch area and to Dublin BART station (B)(T) Upgrade headways on all routes (reduce from 60 minutes to 45 minutes, from 30 minutes to 20 minutes, and from 20 minutes to 15 minutes) (T)

Funding Relationships

RTIP/TIP

0 Special Funding (Eligible for Propositions 108/116, Other Sales Tax)

* MTC Resolution 1876 (Projects in Tier 1, or under way, shown.*1)

RTP-EIR Relationships

(B) Blend Alternative

(T) Transit Capacity

(C) Added as a result of public and Commission comment

TABLE IV-2
Eastern Subarea Transportation System

B. Transit

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
e. Livermore/Amador Valley Transit Authority (LAVTA)	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> 10 fixed bus routes in a 42 square mile area. Three city (Livermore, Dublin, Pleasanton) service area dial-a-ride service 	<ul style="list-style-type: none"> Basic System 	<ul style="list-style-type: none"> Provide service to BART stations (B)(T) Provide new service from Pleasanton/Dublin to Bishop Ranch (30 minute headways during peak periods) (T) Upgrade headways (reduce from 60 to 45 minutes, from 30 to 20 minutes, and from 20 to 15 minutes) (T)
f. Eastern Contra Costa Transit Authority (Tri-Delta)	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> 7 fixed bus routes dial-a-ride service 	<ul style="list-style-type: none"> Basic System 	<ul style="list-style-type: none"> Upgrade headways (B)(T) Add service between West Pittsburg BART station to Livermore Labs via Rte 4/Vasco Road (B)(T) Terminate service to Walnut Creek BART station via Kirker Pass and Ygnacio Valley Road with BART extension to East Antioch (B)(T)
g. Western Contra Costa Transit Authority (Westcat)	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> 7 fixed bus routes and dial-a-ride service to communities in northwestern Contra Costa County 	<ul style="list-style-type: none"> Basic System 	<ul style="list-style-type: none"> Upgrade headways on all local routes (30 minutes during peak (B) to 15 minutes during peak (T)) Modify all routes to serve one or more transfer centers (Pinole, Crockett, Amtrak, Hilltop) (B)(T) Provide all route service to Hercules, Pinole, Hilltop, BART (T)

Funding Relationships

- # RTIP/TIP
 ◊ Special Funding (Eligible for Propositions 108/116, Other Sales Tax)
 * MTC Resolution 1876 (Projects in Tier 1, or under way, shown.*1)

RTP-EIR Relationships

- (B) Blend Alternative
 (T) Transit Capacity
 (C) Added as a result of public and Commission comment

TABLE IV-2
Eastern Subarea Transportation System

B. Transit

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
h. Union City Transit	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> 6 fixed bus routes within corporate limits of Union City dial-a-ride service through Tri-City (Newark, Fremont, Union City) program 	<ul style="list-style-type: none"> Basic System 	
i. Benicia Transit	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> 2 fixed bus routes service provided within Benicia, between Vallejo and Benicia and to Pleasant Hill BART station dial-a-ride service within Benicia and between Vallejo and Benicia 	<ul style="list-style-type: none"> Basic System 	<ul style="list-style-type: none"> Upgrade local service headways (30 minutes all day (B) and 20 minutes during peaks (T)) Upgrade service to Vallejo Ferry Terminal and Pleasant Hill BART station (30 minute peak period headways and 60 minute off-peak headways (T))
j. Fairfield/Suisun City Transit	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> 6 fixed bus routes dial-a-ride service 	<ul style="list-style-type: none"> Basic System 	<ul style="list-style-type: none"> Upgrade headways (B)(T) Improved service to Suisun City Amtrak station (B)(T)
k. City of Vacaville	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> 2 fixed bus routes dial-a-ride service 	<ul style="list-style-type: none"> Basic System 	<ul style="list-style-type: none"> Upgrade headways (B)(T) Extend service to Vacaville/Elmira Amtrak station (B)(T)

Funding Relationships

RTP/TIP

0 Special Funding (Eligible for Propositions 108/116, Other Sales Tax)

* MTC Resolution 1876 (Projects in Tier 1, or under way, shown-*)

RTP-EIR Relationships

(B) Blend Alternative

(T) Transit Capacity

(C) Added as a result of public and Commission comment

TABLE IV-2
Eastern Subarea Transportation System

B. Transit

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
l. City of Vallejo	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> 8 fixed bus routes service within Vallejo, between Vallejo and Fairfield, and to El Cerrito Del Norte BART Station Dial-a-ride service Ferry service between Vallejo and San Francisco 	<ul style="list-style-type: none"> Basic System 	<ul style="list-style-type: none"> Upgrade El Cerrito Del Norte BART station service (B)(T) with extension of BART to Hercules; cut back service to Hercules BART Station (T) Upgrade headways (B)(T) Upgrade ferry service to provide two roundtrips a day, with faster service and reduced headways (B)(T) ϕ Operate Altamont rail service through the I-580 corridor (C) Operate urban rail service across the Carquinez Strait, at the Carquinez or Benicia-Martinez Bridge. (C) Operate East Bay commuter rail system (Oakland to Crockett). (C) Provide daily (including weekends) intercity transit service in Solano County. (C)
m. To be determined			

Funding Relationships

RTIP/TIP

0 Special Funding (Eligible for Propositions 108/116, Other Sales Tax)

* MTC Resolution 1876 (Projects in Tier 1, or under way, shown-*)

RTP-EIR Relationships

(B) Blend Alternative

(T) Transit Capacity

(C) Added as a result of public and Commission comment

TABLE IV-2

Eastern Subarea Transportation System

C. Transfer Points

County	Existing Facilities	Potential Options - Not Included in RTP
Alameda	<ul style="list-style-type: none"> BART stations (West Oakland, 12th St., 19th St., MacArthur, San Leandro, Bayfair, Union City, Hayward, Fremont, Coliseum, Berkeley) Oakland International Airport Alameda Ferry Terminal Oakland Ferry Terminal Port of Oakland Encinal Port Terminals Oakland Amtrak Station 	<ul style="list-style-type: none"> Five BART stations in Hayward/Dublin/Livermore corridor Major Amtrak intermodal transfer facilities at Jack London Square, Oakland Coliseum and Fremont/Newark Three BART stations in Fremont/Warm Springs Corridor Four BART stations in Richmond/Hercules corridor
Contra Costa	<ul style="list-style-type: none"> BART stations (El Cerrito del Norte, Richmond BART/Amtrak, Concord, El Cerrito Plaza, Pleasant Hill, Walnut Creek) Martinez Amtrak station Port of Richmond Buchanan Field/County Airport 	<ul style="list-style-type: none"> Five BART stations in Concord/Pittsburg/Antioch Corridor
Solano	<ul style="list-style-type: none"> Vallejo Park and Ride Lot Vallejo Ferry Terminal Port of Benicia Solano Mall Transfer Center Suisun City Amtrak station 	<ul style="list-style-type: none"> Elmira/Vacaville Amtrak Station

TABLE IV-3
Western Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
a. I-80: (San Francisco)	<ul style="list-style-type: none"> 6 to 8 lane freeway 	<ul style="list-style-type: none"> None 	
b. I-280: (San Francisco and San Mateo County)	<ul style="list-style-type: none"> 6 to 8 lane freeway NB HOV segment in San Francisco 	<ul style="list-style-type: none"> Reconstruct earthquake damaged 8 lane structure from Rte 101 to Mariposa St. (San Francisco) #0 Remove I-280 exit ramps at 3rd St. and build new touchdown at 6th/King St. (San Francisco) #0 Construct Islais Cr. Interchange, NB off ramp, SB on ramp # Construct or modify additional interchanges and overcrossings as appropriate. # 	
c. Rte 101: (San Francisco and San Mateo County)	<ul style="list-style-type: none"> 4 to 6 lane freeway Upgrade Rte 92/101 interchange Widen from 6 to 8 lanes (including 2 HOV lanes) between Whipple Avenue and Santa Clara County line 	<ul style="list-style-type: none"> Reconstruct earthquake damaged ramps north of Oak Street (San Francisco) #0 Add auxiliary lanes from Rte 92 to Third St. (San Mateo) #0 Reconstruct Broadway/Rte 101 interchange (Burlingame) #0 Modify Oyster Point/Rte 101 interchange (S. San Francisco) #0 Construct or modify additional interchanges and overcrossings as appropriate. # 	<ul style="list-style-type: none"> Add auxiliary lanes throughout for a total of 10 lanes (4+)

Funding Relationships

RTIP/TIP

0 Special Funding (Sales Tax, Measure 1, Earthquake Relief, Local Funds)

RTP-EIR Relationships

(B) Blend Alternative

(H) Highway Capacity Alternative

(C) Added as a result of public and Commission comment

TABLE IV-3
Western Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
d. Rte 92: (San Mateo County -Coastal Access)	<ul style="list-style-type: none"> 2 to 4 lane highway 	<ul style="list-style-type: none"> Widen to 6 lanes from Rte 101 to west end of San Mateo Bridge (City of San Mateo) #0 Widen to 3 lanes (4 lanes in Half Moon Bay) from Rte 1 to I-280 (including slow climbing lane) # Construct or modify interchanges and overcrossings as appropriate. # 	
e. Rte 1: (San Mateo County and San Francisco)	<ul style="list-style-type: none"> 2 to 4 lane highway/expressway 	<ul style="list-style-type: none"> Upgrade to 2 lane expressway from 2nd Ave. to Linda Mar Blvd. (Pacific) #0 	<ul style="list-style-type: none"> Widen to 4 lanes in Half Moon Bay (B) (I-H)
f. Rte 480/Embarcadero Fwy.: (San Francisco)	<ul style="list-style-type: none"> 6 lane freeway (inoperable) 	<ul style="list-style-type: none"> Reconstruct as 6 lane parkway from North Pt. to I-280 #0 	
g. San Francisco-Oakland Bay Bridge and approaches (I-80)	<ul style="list-style-type: none"> 10 lane facility 		
h. Hayward-San Mateo Bridge (Rte 92) and approaches	<ul style="list-style-type: none"> 4 to 6 lanes (4-6 lane bridge) 	<ul style="list-style-type: none"> Widen to 6 lanes #0 	
i. Dumbarton Bridge (Rte 84) and approaches	<ul style="list-style-type: none"> 4 to 6 lanes (4 lane bridge) 	<ul style="list-style-type: none"> Widen to 6 lanes from Bridge to Marsh Rd. (Menlo Park) #0 Extend Bayfront Expressway from Marsh Road to Woodside Road (4 lanes) (Redwood City) #0 	<ul style="list-style-type: none"> Widen to 6 lanes from 101 to Rte. 82, construct grade separation and rebuild Rte 84/101 interchange (B)(H) Construct Willow Road as a freeway approach from Rte 101 to the Dumbarton Bridge. (C)

Funding Relationships

RTP/TIP

0 Special Funding (Sales Tax, Measure 1, Earthquake Relief, Local Funds)

RTP-EIR Relationships

(B) Blend Alternative

(H) Highway Capacity Alternative

(C) Added as a result of public and Commission comment

TABLE IV-3
Western Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
1. Golden Gate Bridge and approaches (Rte 101)	• 6 lanes		

Funding Relationships

RTP/TIP

0 Special Funding (Sales Tax, Measure 1, Earthquake Relief, Local Funds)

RTP-EIR Relationships

(B) Blend Alternative

(H) Highway Capacity Alternative

(C) Added as a result of public and Commission comment

TABLE IV-3
Western Subarea Transportation System

B. Transit

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
a. San Francisco Muni	<ul style="list-style-type: none"> Basic System: <ul style="list-style-type: none"> -74 trolley and diesel coach routes - 5 LRT routes - 3 cable car routes Complete Muni Metro "J" line connection 	<ul style="list-style-type: none"> Construct Embarcadero Turnaround #*10 Extend Muni Metro to 6th St. #*10 Implement Muni Metro "F" line service to Fishermans' Wharf #*10 Construct Muni East LRV facility #0 Electricity Noriega line#0 Provide "J/M" lines layover facility #0 Enhance bus service in Bayshore Corridor # 	<ul style="list-style-type: none"> Implement Muni-Geary LRT service (T) *0 Operate new trolley bus route from Market Street to North Beach (T) *0 Eliminate 38 limited and express bus routes (T) Upgrade headways (reduce 60 minute headways to 45 minutes; 30 minute headways to 20 minutes; and 20 minute headways to 15 minutes) (T)
b. Samtrans	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> - 52 local bus routes - 11 express bus routes 	<ul style="list-style-type: none"> Expand feeder bus service to CalTrain stations Eliminate express bus service to downtown San Francisco, following CalTrain service upgrades 	<ul style="list-style-type: none"> Expand feeder service to CalTrain stations (B)(T) Upgrade headways (reduce 60 minute headways to 45 minutes, 30 minute headways to 20 minutes, and 20 minute headways to 15 minutes) (T)
c. BART (see Eastern and Southern Subareas)	<ul style="list-style-type: none"> Basic System 	<ul style="list-style-type: none"> Extend BART to San Francisco International Airport #*10 	

Funding Relationships

RTIP/TIP

0 Special Funding (Eligible for Propositions 108/116, Other Sales Tax)

* MTC Resolution 1876 (Projects in Tier 1, or under way, shown-*1)

RTP-EIR Relationships

(B) Blend Alternative

(T) Transit Capacity Alternative

(C) Added as a result of public and Commission comment

TABLE IV-3
Western Subarea Transportation System

B. Transit

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
d. Dumbarton Commuter Rail	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Operate rail service from Irvington BART station to Alherton CalTrain station; provide six stations and hourly service in peak direction only (T) *0
e. Peninsula Commute Service (CalTrain)	<ul style="list-style-type: none"> • Basic System -54 trains a day between San Francisco and San Jose - 14 stations • Upgrade mid-day headways (reduce from two hours to one hour) • 5 to 10 minute peak period headways to San Francisco 	<ul style="list-style-type: none"> • Extend CalTrain to 2nd and Market Streets or Transbay Terminal (San Francisco) #*10 • Increase CalTrain service to 60 trains per day 	<ul style="list-style-type: none"> • Electric CalTrain system between San Francisco and Tamen Station (San Jose) (B)(T) 0 • Increase service to 156 trains per day (B)(T) 0 • Construct new stations at Palou Ave. (San Francisco) and in Brisbane, and at SFO (B)(T) 0 • Extend CalTrain to downtown San Francisco and across the Dumbarton Bridge. (C)
f. Ferry Service (see Eastern and Northern Subareas)	<ul style="list-style-type: none"> • Existing service to Jack London Square, Alameda, Marin County and Vallejo 		<ul style="list-style-type: none"> • Upgrade equipment (faster boats) (B)(T) 0 • Operate more frequent service (B)(T) • Upgrade headways (B)(T) • Add new ferry service between San Francisco and Berkeley and San Francisco and Richmond (B)(T) 0

Funding Relationships

- # RTP/TIP
0 Special Funding (Eligible for Propositions 108/116,
Other Sales Tax)
• MTC Resolution 1876 (Projects in Tier 1, or under way, shown.*1)

RTP-EIR Relationships

- (B) Blend Alternative
(T) Transit Capacity
(C) Added as a result of public and Commission comment

TABLE IV-3
Western Subarea Transportation System

C. Transfer Points

County	Existing Facilities	Potential Options - Not Included in RTP
San Francisco	<ul style="list-style-type: none"> Ferry Terminal Port of San Francisco BART Stations (Embarcadero, Montgomery, Powell, Civic Center) CalTrain Depot Transit stops in the Mission Street Corridor Transbay Terminal 	<ul style="list-style-type: none"> New CalTrain station at 2nd and Market streets Modified CalTrain Station at 4th and Townsend streets
San Mateo County	<ul style="list-style-type: none"> Daly City BART station Port of Redwood City San Francisco International Airport Menlo Park CalTrain station 	<ul style="list-style-type: none"> New BART station within or adjacent to San Francisco Airport

TABLE IV-4
Northern Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
a. Various sponsors			<ul style="list-style-type: none"> Add projects from Transportation Element of revised Marin Countywide plan. (C)
b. Rte101: (Marin and Sonoma Counties)	<ul style="list-style-type: none"> 4 to 8 lane freeway, including an intermittent HOV lane Widen to 8 lanes (including 2 HOV lanes) from Miller Creek Rd. to Rte 37 	<ul style="list-style-type: none"> Widen to 10 lanes (including 2 HOV lanes and 1 SB auxiliary lane) from central San Rafael to North San Pedro Rd. #0 Widen to 10 lanes (including SB auxiliary lane) from North San Pedro Rd. to Miller Creek Rd. # Widen to 7 lanes (including 1 NB auxiliary lane) from Sir Francis Drake Blvd. to Bellam Blvd. # Construct 4-lane Cloverdale Bypass (freeway) # Construct interchange at Rainier Ave. #0 Widen to 6 lanes (including 2 HOV lanes) from Willred Ave. (Hohmert Park) to Rte 12 (Santa Rosa) # Construct or modify additional interchanges and overcrossings as appropriate. # 	<ul style="list-style-type: none"> Widen to 8 lanes (including 2 HOV lanes) from Rte 37 to Atherton Ave. (B)(H) Widen to 6 lanes (including 2 HOV lanes) from Atherton Ave. to Washington Ave. (B)(H) Widen to 6 lanes (including 2 HOV lanes) from Petaluma to Willred Ave. and from Rte 12 to Windsor (B) (H) Construct new frontage road east of the highway in Novato (B)(H) Widen to 10 lanes (including 1 SB auxiliary lane and 2 HOV lanes) from Sir Francis Drake Blvd. to I-580. (C) Widen to 12 lanes (including 2 auxiliary lanes and 2 HOV lanes) from I-580 to central San Rafael. (C)

Funding Relationships

RTTP/TIP

0 Special Funding (Sales Tax, Measure 1, Earthquake Relief, Local Funds)

RTP-EIR Relationships

(B) Blend Alternative

(H) Highway Capacity Alternative

(C) Added as a result of public and Commission comment

TABLE IV-4
Northern Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
c. Rte 12	<ul style="list-style-type: none"> 2 to 4 lane highway 	<ul style="list-style-type: none"> Widen to 3 lanes (including climbing lane) from Rte 29 to Solano County line.# 	<ul style="list-style-type: none"> Widen to 4-lane expressway from Rte 29 to I-80 (Solano County) (B) (H) Widen to 5 lanes from Los Alamos Road to Summerfield Road (B)(H) Widen to 6-lanes from Los Alamos Road to Summerfield Road (H) Widen to 4 lanes from Summerfield Road to Farmers Lane (B)(H) Widen to 4-lane expressway from Fulton Road to Llano Road (B)(H)
d. Rte 116	<ul style="list-style-type: none"> 2 lane highway 	<ul style="list-style-type: none"> Widen to 4 lanes from Frates Road to Rte 101 #0 	<ul style="list-style-type: none"> Construct Sebastopol Bypass including: <ul style="list-style-type: none"> widening Llano and Occidental Rds. to 4 lanes (H) new interchange at Rte 12 (H) Widen to 4 lanes from Rte 101 to Stony Point Road (B) (H)
e. Rte 37	<ul style="list-style-type: none"> 2 to 4 lane highway 		
f. Rte 1	<ul style="list-style-type: none"> 2 lane highway 		
g. Rte 29	<ul style="list-style-type: none"> 2 lane highway to 4 lane expressway 	<ul style="list-style-type: none"> Construct Redwood/Trancas Interchange# 	
h. Rte 121	<ul style="list-style-type: none"> 2 lane highway 		
i. Rte 128	<ul style="list-style-type: none"> 2 lane highway 		

Funding Relationships

RTP/TIP

0 Special Funding (Sales Tax, Measure 1, Earthquake Relief, Local Funds)

RTP-EIR Relationships

(B) Blend Alternative

(H) Highway Capacity Alternative

(C) Added as a result of public and Commission comment

TABLE IV-4
Northern Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
j. I-580	<ul style="list-style-type: none"> 4 lane freeway 	<ul style="list-style-type: none"> Construct or modify interchanges and overcrossings as appropriate. # 	

Funding Relationships

RTP/TIP

0 Special Funding (Sales Tax, Measure 1, Earthquake

Relief, Local Funds)

RTP-EIR Relationships

(B) Blend Alternative

(H) Highway Capacity Alternative

(C) Added as a result of public and Commission comment

TABLE IV-4
Northern Subarea Transportation System

B. Transit

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
a. Various sponsors			<ul style="list-style-type: none"> Add projects from Transportation Element of revised Marin Countywide Plan. (C)
b. Cities of Santa Rosa, Petaluma and Napa and County of Sonoma	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> A total of 43 fixed bus routes within and between communities Dial-a-ride service 	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> Operate new bus route from City of Napa to Vallejo Ferry Terminal (60 minute headways all day) # 	<ul style="list-style-type: none"> Upgrade headways on all local routes to at least 30 minutes all day (B)(T); ultimately reduce 60 minute headways to 45 minutes, 30 minute headways to 20 minutes, and 20 minute headways to 15 minutes. (T) Extend Napa Transit Vallejo express bus route run between Calistoga and Vallejo (B)(T) Provide service to commuter rail/LRT stations (B)(T) Add Santa Rosa CityBus Long Range Transit Plan projects. (C)

Funding Relationships

RTIP/TIP

0 Special Funding (Eligible for Propositions 108/116, Other Sales Tax)

* MTC Resolution 1876 (Projects in Tier 1, or under way, shown-*)

RTP-EIR Relationships

(B) Blend Alternative

(T) Transit Capacity

(C) Added as a result of public and Commission comment

TABLE IV-4
Northern Subarea Transportation System

B. Transit

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
c. Golden Gate Bridge Highway and Transportation District (GGBHTD)	<ul style="list-style-type: none"> Basic System <ul style="list-style-type: none"> 53 fixed bus routes providing local service to communities in Marin County and trunk service along Rte 101 between Santa Rosa and downtown San Francisco Ferry service between Larkspur and San Francisco and Sausalito and San Francisco 	<ul style="list-style-type: none"> Basic System 	<ul style="list-style-type: none"> Restructure bus service to serve new rail systems and stations as follows: <ul style="list-style-type: none"> discontinue express bus on Rte 101 north of Larkspur Ferry Terminal (B)(T) add new route between city of Sonoma and downtown San Francisco (B)(T) add three new routes between Larkspur and San Francisco (Geary St., Van Ness Ave., and North Point) (B)(T) Upgrade headways (reduce from 60 minutes to 45 minutes, from 30 minutes to 20 minutes and from 20 minutes to 15 minutes) (T) Upgrade ferry service as follows: <ul style="list-style-type: none"> reduce headways on Larkspur ferry service (to 10 minutes during peak, 30 minutes mid-day) (B)(T) add new ferry service between Larkspur and Oakland (30 minute headways during peak, 60 minutes during off-peak) (B)(T) upgrade headways (Larkspur-15 minutes mid-day; Sausalito, Tiburon, Oakland-15 minutes during peaks and 30 minutes mid-day) (T) Operate new service to Novato LRT/commuter rail station (B) (T) Expand ferry service north of Larkspur. (C)

Funding Relationships

- # RTP/TIP
- ◊ Special Funding (Eligible for Propositions 108/116, Other Sales Tax)
- MTC Resolution 1876 (Projects in Tier 1, or under way, shown-*)

RTP-EIR Relationships

- (B) Blend Alternative
- (T) Transit Capacity
- (C) Added as a result of public and Commission comment

TABLE IV-4
Northern Subarea Transportation System

B. Transit

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
d. Rail Service	<ul style="list-style-type: none"> No existing rail service 	<ul style="list-style-type: none"> Proposition 108 funds programmed for rail study of Northwestern Pacific (NWP/RR) right-of-way; rail project eligible for Proposition 116 funds. 	<ul style="list-style-type: none"> Commuter Rail Service (CRS): *Ø <ul style="list-style-type: none"> operate new service between Santa Rosa and Larkspur Ferry Terminal, with stations at Rohnert Park, Colati, Penngrove, and Petaluma; provide 15 minute headways in peak direction during peak periods, and 60 minute headways (both directions) during off-peak period (B)(T) operate reverse commute service between Larkspur and Santa Rosa (T) extend service north to Healdsburg (C) Light Rail Train (LRT): *Ø <ul style="list-style-type: none"> operate new LRT between Novato and Larkspur with stations at Bel Marin Keys, Hamilton AFB, St. Vincents, Smith Ranch, and San Rafael; provide service in both directions every 10 minutes during peak periods, and 15 minutes during off-peak periods. (B)(T) Implement BART service in the North Bay. (C)

Funding Relationships

- # RTIP/TIP
Ø Special Funding (Eligible for Propositions 108/116, Other Sales Tax)
* MTC Resolution 1876 (Projects in Tier 1, or under way, shown-*)

RTP-EIR Relationships

- (B) Blend Alternative
(T) Transit Capacity
(C) Added as a result of public and Commission comment

TABLE IV-4
Northern Subarea Transportation System

C. Transfer Points

County	Existing Facilities	Potential Options - Not Included in RTP
Marin	<ul style="list-style-type: none"> • Larkspur Ferry Terminal • Tiburon Ferry Terminal • Sausalito Ferry Terminal • San Rafael Transit Center 	<ul style="list-style-type: none"> • New commuter and light rail stations in NWPRR Corridor
Sonoma	<ul style="list-style-type: none"> • Santa Rosa Transit Mall • Santa Rosa Greyhound/Golden Gate Transit Terminal • Santa Rosa Fairgrounds Park-and-Ride Lot • Sonoma County Airport • Petaluma (4th/C Sts.) 	<ul style="list-style-type: none"> • New commuter and light rail stations in the NWPRR Corridor
Napa	<ul style="list-style-type: none"> • Napa City Pearl Street Bus Transfer Center 	

TABLE IV-5
Southern Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
a. Various sponsors			
b. Route 101	<ul style="list-style-type: none"> 6 to 8 lane freeway Widen to 8 lanes (including 2-HOV lanes) from Guadalupe Parkway to San Mateo County line and from Bernal Rd. to I-280/I-680 interchange. 	<ul style="list-style-type: none"> Construct new interchange at Mabury Road (San Jose)#0 Widen to 8 lanes (including 2 HOV lanes) from Guadalupe Parkway to I-280/I-680 interchange. # Construct or modify additional interchanges or overcrossings as appropriate. #0 	<ul style="list-style-type: none"> Use T2010 as the basis for the Southern Subarea highway network. (C) Add southbound lane from Central Expressway to Rte. 87 (San Jose) (B)(H) Construct direct aerial HOV connection to I-880. (B) (H) Widen to 8 lanes (including 2-HOV lanes) from Cochran Rd. to Bernal Ave. (B)(H); then extend HOV lanes south from Bernal Rd. to Rte 152 (Gilroy) (H) Construct full interchange at Rte 25 (south of Gilroy)(B)(H) Modify various interchanges and overcrossings, as appropriate.
c. I-280	<ul style="list-style-type: none"> 6 lane freeway Widen to 8 lanes (including 2-HOV lanes) from Leland Ave. (San Jose) to Magdalena Ave. (Los Altos) 		

Funding Relationships

RTIP/TIP

0 Special Funding (Sales Tax, Measure 1, Earthquake Relief, Local Funds)

RTP-EIR Relationships

(B) Blend Alternative

(H) Highway Capacity Alternative

(C) Added as a result of public and Commission comment

TABLE IV-5
Southern Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
d. Route 85	<ul style="list-style-type: none"> 4-lane freeway from Rte 101 (Mountain View) to I-280 Widen to 6-lane freeway (including 2 HOV lanes) from Rte 237 to The Dalles (Sunnyvale) Construct new 6-lane freeway (including 2 HOV lanes) from Sanchez Dr. to Cottle Rd. 	<ul style="list-style-type: none"> Construct new 6 lane freeway (including 2 HOV lanes) from I-280 to Sanchez Dr. and from Cottle Rd. to Rte 101/Bernal Rd. #0 Construct Rte 85/Rte 101 interchange. #0 Construct interchange at Quilo Rd. #0 Construct or modify additional interchanges and overcrossings as appropriate. #0 	<ul style="list-style-type: none"> Add NB and SB HOV lanes from Rte 101 (Mountain View) to Rte 237 and from Stevens Creek Blvd. to I-280 (Cupertino) (B)(H)
e. Route 87	<ul style="list-style-type: none"> Construct Rte 87 as a 4 lane freeway from I-280 to Rte 85 extension (San Jose) 	<ul style="list-style-type: none"> Upgrade to 6-lane freeway (including 2 HOV lanes) from Coleman to Route 101 #0 	<ul style="list-style-type: none"> Widen to 6 lanes (including 2 HOV lanes) from Coleman to new Route 85 (B) (H) Add direct HOV ramps from NB Rte 87 to WB Rte 101 (B) (H)
f. I-880	<ul style="list-style-type: none"> 4 to 6 lane freeway (4 lanes from Rte 262 [Fremont] to Rte 101/I-880 interchange [San Jose]) 	<ul style="list-style-type: none"> Widen from 4 to 6 lanes from Rte 262 to Montague Expressway # Revise I-880/Rte 101 interchange and add direct HOV ramp from WB Rte 101 to NB I-880. # Widen from 6 to 8 lanes (including 2 HOV lanes) from Dixon Landing Rd. to Montague Expressway. # Widen from 4 to 6 lanes (including 2 HOV lanes) from Montague Expressway to Route 101. # Construct or modify interchanges and overcrossings as appropriate. #0 	<ul style="list-style-type: none"> Widen to 10 lanes from Rte 262 to Montague Expressway. (H) Construct aerial HOV connector to Rte 237. (B) (H) Widen to 8 lanes (including 2 HOV lanes) from Montague Expwy. to Guadalupe Pkwy. (Rte 87)(H) Construct I-880/I-680 connector in or near Milpitas. (C)

Funding Relationships

RTIP/TIP

0 Special Funding (Sales Tax, Measure 1, Earthquake

Relief, Local Funds)

RTP-EIR Relationships

(B) Blend Alternative

(H) Highway Capacity Alternative

(C) Added as a result of public and Commission comment

TABLE IV-5
Southern Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
g. Route 17	<ul style="list-style-type: none"> 4 to 6 lane freeway/expressway 	<ul style="list-style-type: none"> Construct Rte. 17 detour at 17/85 interchange #0 	<ul style="list-style-type: none"> Build southbound auxiliary lane (HOV lane during peak hour) from Hamilton Avenue to San Tomas Expressway (Campbell) (B)(H) Widen to 6 lanes (including 2 HOV lanes) from San Tomas Expressway to Rte 9 (Los Gatos) (B)(H) Widen to 8 lanes (including 2 HOV lanes) from Alameda County line to Montague Expressway (B)(H)
h. I-680	<ul style="list-style-type: none"> 6 to 12 lane freeway (8 to 12 lanes from Montague Expressway (Milpitas) to Rte 101) 		
i. Route 237	<ul style="list-style-type: none"> 4 to 6 lane freeway/expressway 	<ul style="list-style-type: none"> Construct new interchanges at Middlefield Road and Maude Road (Sunnyvale) #0 Widen to 6 lane freeway (including 2 HOV lanes) from Middlefield Rd. to Maude Rd. (#) and Lawrence Expressway to Guadalupe River #0 Construct interchange east of Zanker Rd. #0 Construct interchange at N. First St. #0 	<ul style="list-style-type: none"> Widen to 6 lanes (including 2 HOV lanes) from Mathilda Ave. to Rte 85 (Sunnyvale) (B)(H) Widen to 8 lanes (including 2 HOV lanes) from Mathilda Ave. to I-880 (H) Add 2 auxiliary lanes from Lafayette to McCarthy (north San Jose) (B)(H) Add direct HOV ramps from SB I-880 to WB Rte 237 and NB I-880 to WB Rte 237 (B) (H) Reconstruct Rte 237/I-880 interchange (B) (H)
j. Route 152	<ul style="list-style-type: none"> 2-4 lane highway (Gilroy and South County) 		<ul style="list-style-type: none"> Construct new Rte 152 as 2-4 lane expressway from Rte 101 (at Rte 25) to Rte 156 (San Felipe) (B)(H)
k. Route 82	<ul style="list-style-type: none"> 4 lane highway (San Jose) 	<ul style="list-style-type: none"> Widen to 6 lanes from Lafayette to Scott Blvd. #0 	
l. Route 25	<ul style="list-style-type: none"> 2 lane highway (Gilroy) 		<ul style="list-style-type: none"> Widen to 4 lanes. (C)

Funding Relationships

RTP/TIP
 0 Special Funding (Sales Tax, Measure 1, Earthquake Relief, Local Funds)

RTP-EIR Relationships

(B) Blend Alternative
 (H) Highway Capacity Alternative
 (C) Added as a result of public and Commission comment

TABLE IV-5
Southern Subarea Transportation System

A. Highways

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
m. Expressways • Montague • Lawrence • Central • San Tomas • Almaden • Capitol	• 4 to 6 lane	• Widen Montague Expressway to 8 lanes (including 2 HOV lanes) from Trimble Rd to I-680 Ø • Widen following expressways to 8 lanes (including 2-HOV lanes) - Lawrence (from Rte 237 to Saratoga Ave) - Central (from Bailey Rd. to De la Cruz Blvd.) - San Tomas (from Central Expressway to Mission College) Ø • Widen following expressways to 6-8 lanes (including 2 HOV lanes) - Almaden (from Harry Rd to Coleman Rd) - Capitol (from Almaden Expressway to I-680) Ø	

Funding Relationships

RTP/TIP

Ø Special Funding (Sales Tax, Measure 1, Earthquake Relief, Local Funds)

RTP-EIR Relationships

(B) Blend Alternative

(H) Highway Capacity Alternative

(C) Added as a result of public and Commission comment

TABLE IV-5
Southern Subarea Transportation System

B. Transit

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
a. Various sponsors			<ul style="list-style-type: none"> • Use T2010 as the basis for the Southern Subarea transit network.
b. Santa Clara County Transit District (SCTD)	<ul style="list-style-type: none"> • Basic System <ul style="list-style-type: none"> - 61 local bus routes - 22 express bus routes - 22 mile LRT system (Guadalupe Corridor) # 	<ul style="list-style-type: none"> • Construct Tasman Corridor LRT extension and acquire rolling stock #*10 • Complete Guadalupe Corridor LRT system # 	<ul style="list-style-type: none"> • Construct additional LRT extensions and acquire rolling stock. • Modify bus routes to serve LRT, BART and Caltrain extensions (B)(T) • Delete express bus routes in competition with LRT service (B)(T) • Upgrade headways (B)(T)
c. Peninsula Commute Service (Caltrain) (see Western Subarea)	<ul style="list-style-type: none"> • Basic System • Extend service south from Cahill station (San Jose) to new Tamien station 	<ul style="list-style-type: none"> • Basic System • Acquire remaining stations • Construct centralized maintenance facility 	<ul style="list-style-type: none"> • Extend service to Gilroy (B)(T) *0 • Provide peak period service in reverse direction between Gilroy and Tamien (every 30 minutes) (T) • Provide two-direction mid-day trains (hourly) between Gilroy and Tamien (T) 0 • Add 7 new stations south of Tamien (T) • Extend Caltrain to Gilroy. (C) • Extend Caltrain to Milpitas and Fremont (see Eastern Subarea). (C)
d. BART (see Eastern Subarea)	<ul style="list-style-type: none"> • No rail service 	<ul style="list-style-type: none"> • No rail service 	<ul style="list-style-type: none"> • Extend service from Warm Springs to San Jose/City of Santa Clara (B)(T) *0 • Add 7 new stations (B)(T) • Construct BART rail yard in Santa Clara at existing SP rail yard. (B) (T)

Funding Relationships

- # RTIP/TIP
0 Special Funding (Eligible for Propositions 108/116,
Other Sales Tax)
• MTC Resolution 1876 (Projects in Tier 1, or under way, shown.*1)

RTP-EIR Relationships

- (B) Blend Alternative
(T) Transit Capacity
(C) Added as a result of public and Commission comment

TABLE IV-5
Southern Subarea Transportation System

B. Transit

Route	Existing Facilities	RTP Approved Projects (Currently Programmed Commitments)	Potential Options - Not Included in RTP
e. Amtrak (see Eastern Subarea)	<ul style="list-style-type: none"> No intra-regional service 	<ul style="list-style-type: none"> Provide service between Sacramento and San Jose: <ul style="list-style-type: none"> 10 daily round trips stations at Great America, San Jose and Tamien #0 	<ul style="list-style-type: none"> Increase service to provide: <ul style="list-style-type: none"> 14 round trips daily (10 local, 4 express) (B) operate service at 79 mph (B) new station in Santa Clara (B)(T) 24 round trips daily (20 local, 4 express) (T) electricity service; operate at 125 mph; service connects with Dumbarton Commute Service at Newark (T)

Funding Relationships

- # RTP/TIP
 0 Special Funding (Eligible for Propositions 108/116, Other Sales Tax)
 * MTC Resolution 1876 (Projects in Tier 1, or under way, shown.*1)

RTP-EIR Relationships

- (B) Blend Alternative
 (T) Transit Capacity
 (C) Added as a result of public and Commission comment

TABLE IV-5
Southern Subarea Transportation System

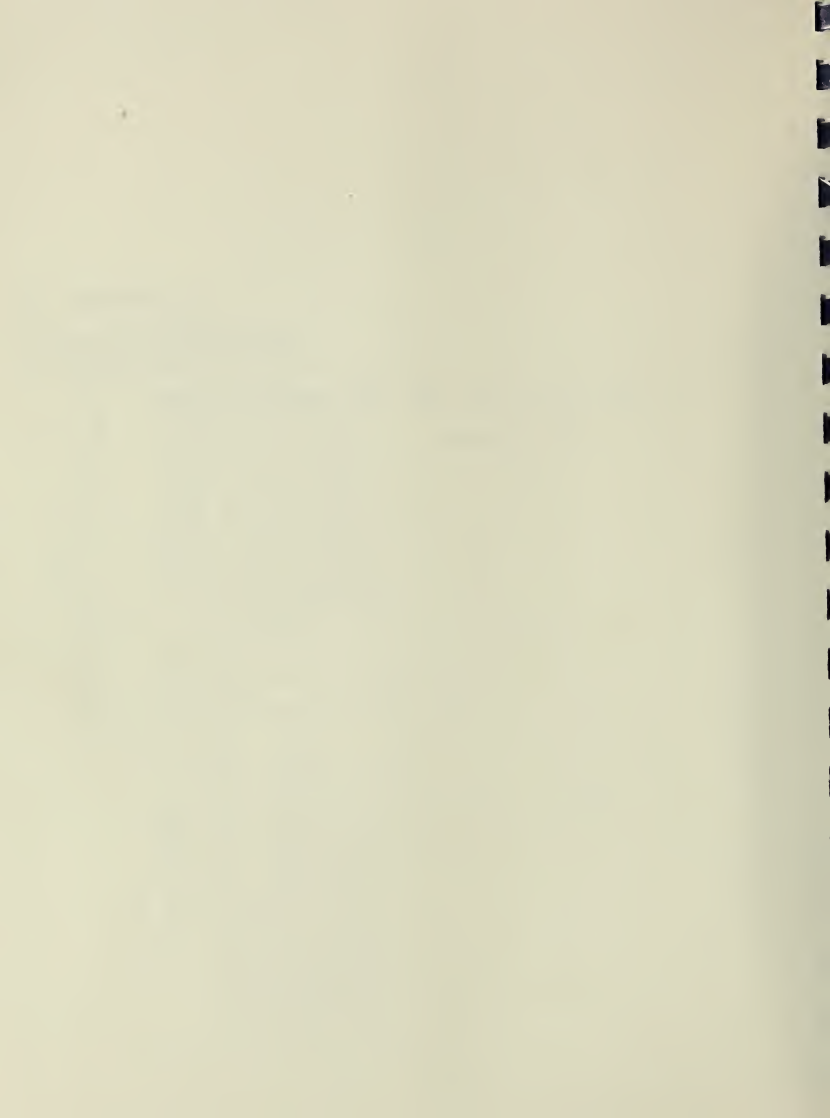
C. Transfer Points

Existing Facilities	Potential Options - Not Included in RTP
<ul style="list-style-type: none"> • San Jose Transit Mall • San Jose International Airport • CalTrain stations ((Cahill [San Jose], Palo Alto, Sunnyvale) • Santa Clara LRT stations (Guadalupe Corridor) • Weller/Main Bus Transit Center • Eastridge Bus Transit Center • San Antonio Bus Transit Center • Park-and-Ride lots 	<ul style="list-style-type: none"> • City of Santa Clara Peninsula Commute Service (CalTrain) Station • Points to be determined along rail extensions, including: <ul style="list-style-type: none"> - Santa Clara County BART extension - Tasman Corridor LRT Extension - Vasona Corridor LRT Extension - Peninsula Commute Service Extension to Gilroy

CHAPTER IV:
ACTION ELEMENT

D. MTS ANALYSIS AND RECOMMENDATIONS

7. MTS Arterials



7. MTS: Arterials

Current Description

Section IV.D.2-5 described the current Bay Area roadway network and IV.D.6 suggested various improvements for freeways and highways. However, a significant portion of the Bay Area traffic is carried on major arterials. Arterials play a major role in the region's movement of persons and commerce, serving as freeway relievers, connectors in the regional roadway system, roadbeds for transit routes, and access to many community facilities and activity centers. As such, they are candidates for inclusion in the Metropolitan Transportation System.

MTC has explored and assessed arterial improvements as a key strategy to alleviate congestion. Recommendations in the RTP stem from two main studies, the Bay Area Freeway Reliever Routes Study and the Regional Arterial System Study. The "MTS Streets and Highways System" maps contained in the previous subarea discussions depict the arterials included in the MTS.

Identified Deficiencies

Balancing future roadway demand in major travel corridors will necessitate looking at improvement options on both highways and local arterials--essentially devising ways to make two parallel or closely located facilities operate as a single facility serving the travel needs of a corridor. From a system viewpoint, many of the region's major arterials could provide cost-effective alternatives to highway expansion by serving local vehicle trips and providing opportunities for transit expansion.

The Bay Area Freeway Reliever Routes Study, Phases I and II showcased a number of candidate freeway reliever opportunities for accommodating local short distance trips:

- o San Pablo Avenue/Parker Avenue/Old Highway 40 in the I-80 corridor of Contra Costa County
- o Hesperian Blvd./Union City Blvd./Ardenwood Blvd. in the I-880 corridor of Alameda County
- o Central Expressway in the U.S. 101 corridor of Santa Clara County
- o Stony Point Road/Fulton Road and Petaluma Hill Boulevard in the U.S. 101 corridor of Sonoma County
- o San Pablo Avenue in the I-80 corridor of Alameda County
- o Cordelia Road/Route 12/Walters Road/Peabody Road/Leisure Town Road in the I-80 corridor of Solano County
- o Andersen Drive Extension in the U.S. 101 corridor of Marin County
- o Capitol Expressway and Capitol Avenue in the U.S. 101 and I-680 corridors of Santa Clara County.

The study pointed out several constraints to optimizing these routes for local reliever trips:

- o Lane configurations that are not consistent along the length of the arterial.
- o Signal timing calibration that does not provide adequate "green time" to enable consistent intersection capacities along the arterial route (see section IV.D.8.d for more information on regional signal timing programs).
- o Poor freeway access to major arterials.

Another report, the Regional Arterial System Study, defined a group of arterials that, if upgraded, would address a wide range of travel needs in urban and suburban areas. These routes directly support the freeway system. The Regional Arterial System Study did not examine specific route deficiencies, but did review potential strategies for increasing arterial capacity. It noted that instituting arterial improvements may be hindered on a number of fronts. Communities are very concerned about noise, air pollution, and safety consequences of attracting more traffic to any particular street.

Roadway improvements to accommodate greater traffic also may generate localized air pollution, noise and vibration. Increased speeds resulting from arterial improvements may pose increased risks for pedestrians and bicyclists. Traffic flow improvement measures must not undermine the safety of bicyclists or pedestrians; on the contrary, any improvements should enhance bicyclist and pedestrian safety. Adding new lanes to arterials is difficult in most cases, so other strategies are necessary. Where arterials run through more than one county or city, coordinating local jurisdictional approval and financing is crucial.

Recommended Actions

With the growing recognition that there are limits to which freeway expansion can ease congestion problems in the Bay Area, the role of the arterial system becomes more important. Enhancing arterial operations holds the promise of better serving local trips that would otherwise compete for capacity with through trips on freeways, facilitating city traffic flow and improving access to the highway system.

A menu of techniques have been assembled as a result of the Bay Area Freeway Reliever Routes Study and the Regional Arterial System Study. They include:

- o constructing new arterials/filling in "missing links"
- o intersection improvements, grade separation
- o improved geometries/turn lanes
- o signal interconnection and coordination/computerized systems
- o HOV lanes/transit improvements
- o roadway widening/realignment.

Gaining acceptance of arterial improvements as a valid approach to congestion relief will entail continuing leadership on the part of MTC. Suggested policy directives are as follows:

- o Continue to identify new candidate freeway reliever routes and explore their potential with affected jurisdictions.
- o Identify candidate routes for evaluation that are specifically designed to enhance transit or HOV operations. This would reinforce arterial improvements as part of a multi-faceted, multi-modal corridor management program.
- o Develop guidelines and encourage cities and counties to conduct their own arterial improvement projects. The consistent methodology developed through the Bay Area Freeway Reliever Routes Study could be given wider application among the many Bay Area local jurisdictions.
- o Pursue traffic surveillance and motorist information opportunities to support an improved arterial network. Significant benefits have been shown for a Traffic Operations System (TOS) for the freeway network (see Section IV.D.8.a).
- o Help Caltrans to develop arterials as potential alternatives to freeway widening as part of route study and environmental reports.
- o Ascertain that traffic flow improvement measures provide adequate lane width for the safety of bicycle and pedestrian transportation.

CHAPTER IV:
ACTION ELEMENT

- D. MTS ANALYSIS AND RECOMMENDATIONS**
 - 8. Streets and Highways: Related Programs**

8. Streets and Highways: Related Programs

a. Gateway Concept and Traffic Management

Gateways are major entry points into and within the Bay Area created by the need for transportation facilities to cross the bay, rivers or hills. The most prominent of these gateways are the region's eight major bridges, the Caldecott Tunnel, the Altamont Pass, Rte. 17 over the Santa Cruz mountains, and the major roads that access the Marin and San Mateo coasts. In many, if not most, of these gateways, highway expansion is not likely in the near future if at all.

The design of the MTS must reflect these gateways both in terms of adding capacity and in the management and operation of the system. Highway capacity expansion must be in balance with gateway capacity limitations, and improvements at the gateway should encourage carpool and transit usage such as that provided on the Bay Bridge and Golden Gate Bridge corridors.

The RTP gives explicit recognition to the important function of gateways in future travel growth in the region. MTC will work with Caltrans to plan capacity improvements for freeways--such as carpool lanes, ramp metering treatment, transit preferential treatment, toll collection facilities, and toll levels--consistent with the gateway concept. MTC will also work with local authorities to insure that gateway strategies are consistent with regional and local policies for land use and development.

8. Streets and Highways: Related Programs (Cont'd.)

b. *Traffic Operations System (TOS)*

Current Description

In the late 1980s, Caltrans District 4 began a multi-year effort to design and implement a Traffic Operations System (TOS) on Bay Area freeways. The goal of the TOS is to improve the operation of the freeway system by electronically monitoring traffic, informing motorists about incidents and delays, and managing the freeway through metering and service patrols. The design standards for this surveillance, communication and control system may be used throughout the state. The TOS is intended to reduce delay both from incidents and accidents that restrict traffic flow, and from commute period congestion. It will also reduce the number of accidents by warning motorists about road conditions.

The TOS consists of four key components:

- o **Surveillance.** Electronic surveillance (closed circuit TV, traffic detectors, and callboxes) will allow remote monitoring of volume and speed, and will allow rapid detection and identification of accidents, spilled loads, and other incidents resulting in unusual delay and congestion, so that the appropriate emergency equipment can be dispatched. Previous experience indicates that five minutes of congestion can be prevented for every minute saved in detecting an incident.
- o **Motorist Information.** Information will be communicated quickly to affected motorists through changeable message signs, highway advisory radio and media interfaces so that motorists can alter their travel plans.
- o **Management Systems.** Metering can be used to manage access to the freeway system so that service patrol tow trucks and other emergency equipment can reach accidents. Metering can also be used during commute periods to maximize freeway efficiency by maintaining high flow rates (35 mph or above) and thus maximizing the vehicle and people carrying capacity of the system.
- o **Traffic Operations Center.** Caltrans and the Highway Patrol will jointly staff the Center, where information from the traffic detectors and closed circuit TV cameras will allow the agencies to detect and identify problems and coordinate a response. The center will be staffed 24 hours per day.

State I of the TOS consists of approximately 220 miles of congested freeways in the urban core of the Bay Area. Stage I includes Route 101 from Route 37 in Marin County to Route 85 in Santa Clara County, Interstate 80 from Vallejo to San Francisco, I-880 from Oakland to Route 85, and Routes 92 and 84 between I-880 and Route 101. Stage I also includes changeable message signs at freeway to freeway interchanges along I-680 at I-80, the Benicia Bridge, Route 24 and I-580. Construction costs are expected to be at least \$130 million, although a major portion of the construction will occur as part of freeway widening projects, and therefore will not require

separate programming. Construction of Stage I began in 1990. Caltrans expects to complete the TOS as a 500-mile system in the Bay Area.

Stage I of the TOS is included in the State Transportation Control Measure (TCM) Plan adopted by MTC in November 1990 as State TCM 11. The first portion of Stage I, which is funded in the 1990-94 TIP, was included in the Federal Air Quality Contingency Plan as TCM 26. The TCM measures are based on the premise that air quality benefits when traffic incidents are cleared quickly, decreasing the number of idling vehicles. Additional air quality benefits may result from improved operating speeds on the freeway during peak commute periods.

Identified Deficiencies

- o Acceptance. Although freeway surveillance, communication and metering systems are used in many other parts of the country, Bay Area motorists are unfamiliar with their operation and benefits. The concept of metering is sometimes resisted by motorists who philosophically disagree with the concept of controlling access to freeways, and may be resisted by local governments worried about traffic queues from meters causing congestion on local streets. Metering has been used successfully in San Jose for several years, but a skeptical motoring public may need to have the benefits demonstrated prior to accepting the TOS.
- o Costs. Including the TOS in all freeway widening and reconstruction projects increases the cost of those projects. Sponsors of locally funded projects, such as half-cent sales tax agencies, may resist paying for TOS components and suggest that the state incur all TOS costs. However, it is more expensive to install the TOS separately and difficult to separately fund the TOS within a single construction contract.

Extension of the TOS beyond the 220-mile Stage I system (now occurring on freeway widenings and reconstruction) depends on the availability of funding and demonstration of Stage I benefits. To receive maximum benefit from the TOS, the region would have to expand it to cover the 500-mile freeway system. Additional benefits would occur from combining the TOS with a "smart street" system, which allows coordination of motorist information equipment and traffic signal timing on arterials with the freeway TOS. Initially, "smart corridors" will be pursued in Santa Clara and Alameda counties.

Recommended Actions

- o Require implementation of TOS, including metering and HOV bypasses, in all freeway reconstruction and widening projects.
- o Where necessary, secure funds to implement the TOS as separate construction projects in areas needed to complete Stage I.
- o Analyze the impacts of the TOS through "before and after" studies that address traffic flow throughout the MTS.

8. Streets and Highways: Related Programs (cont.)

c. *High Occupancy Vehicle (HOV) Lane Operations*

Current Description

In April 1990, MTC adopted the 2005 HOV Lane Master Plan, which was developed by MTC, Caltrans, and the California Highway Patrol (CHP). That plan expanded on the 77 lane miles of HOV that existed as of January 1989 and 221 lane miles programmed for construction in the 1989-93 Transportation Improvement Program; it also called for construction of an additional 16 projects entailing 191 miles of HOV lanes by 2005. (See Figure IV-23)

The Bay Area's HOV system includes physical facilities such as HOV lanes on freeways, HOV by-pass lanes at interchanges with ramp metering, and park-and-ride lots to facilitate formation of carpools. In August 1990, the 2005 HOV Program Prioritization project was completed and the final report published. The study provides guidance on the types of projects needed to enhance the Bay Area's HOV system. The study evaluated and prioritized the 16 unfunded HOV lane projects in the 2005 HOV Lane Master Plan. It also evaluated measures that support usage of HOV lanes, and developed design and implementation guidelines for each measure. The measures were preferential parking policies, employer-based marketing and promotion programs, park-and-ride lots, HOV ramps and freeway-to-freeway connectors, and enforcement procedures.

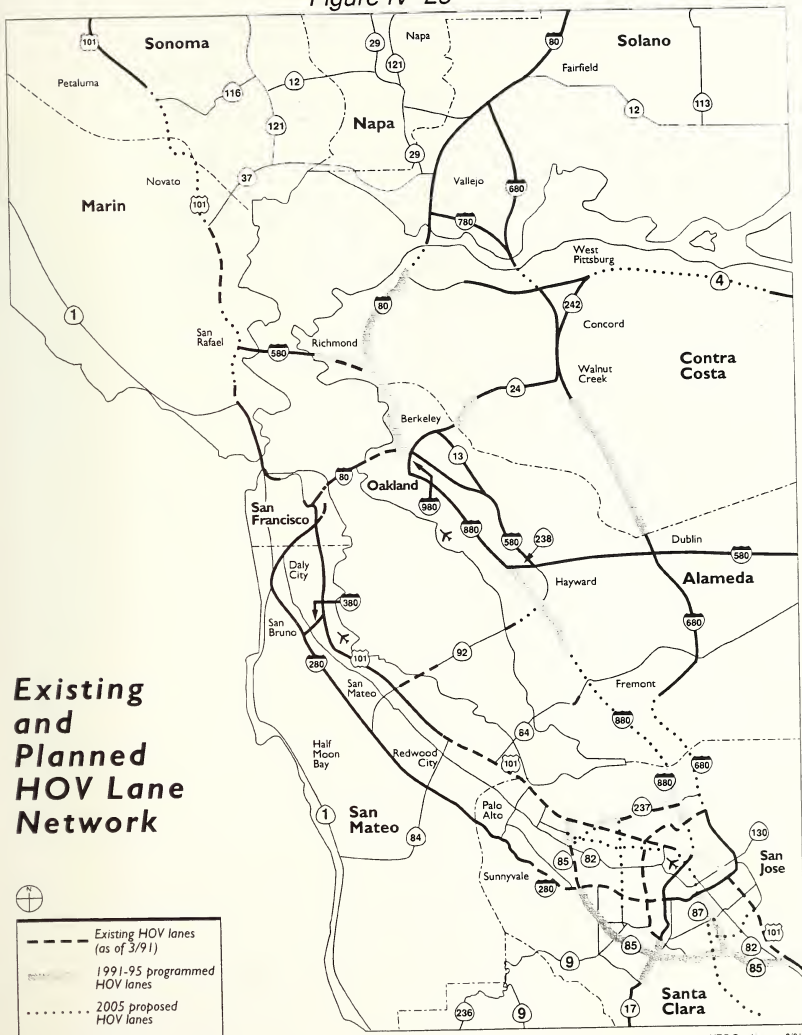
The transportation control measures (TCM) plans, both state (STCM) and federal (FTCM), contain measures related to HOV planning, construction and operation:

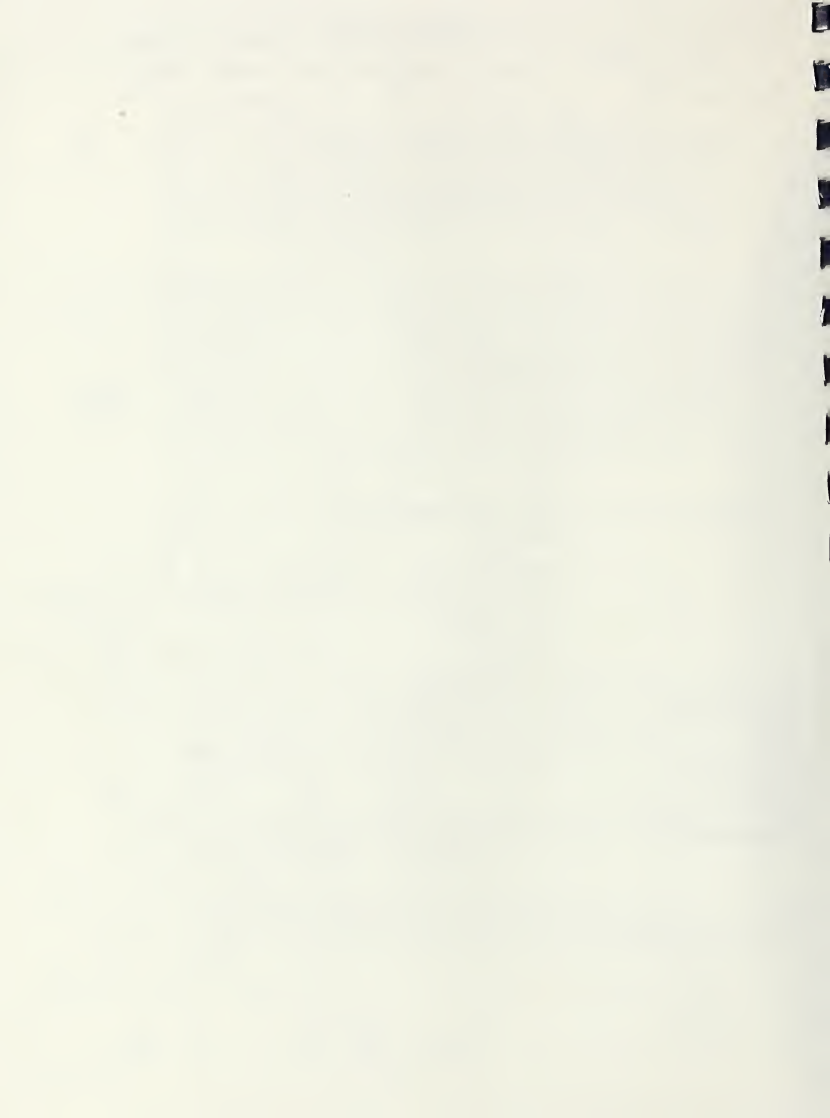
FTCM 4	Continue to Support Development of HOV Lanes
FTCM 20	Regional HOV System Plan
STCM 8	Construct Carpool/Express Bus Lanes on Freeways

Identified Deficiencies

- o **Reservation of lanes.** The operation of the HOV system currently faces several problems. Reserving lanes for HOVs during periods of severe congestion generates some opposition from local agencies and the traveling public, even if those lanes carry more people and reduce overall delay on the freeways. The perception that enforcement of HOV lane use is inconsistent also erodes public support for HOV lanes.
- o **Dependence on TCMs.** Utilization and expansion of the HOV system over the long term will depend in large part on the success of transportation control measures and other efforts to increase vehicle occupancy.
- o **Funding.** The need to interconnect HOV lanes on intersecting freeways and expressways may become acute by the end of the century. Design guidelines and cost-effectiveness criteria have been developed, but it is not clear that these multi-million

Figure IV-23





dollar HOV connector projects will compete successfully for the limited highway construction funds expected.

Recommended Actions

- o Refine and update the travel demand models that forecast future utilization of HOV lanes.
- o Evaluate every highway capacity expansion project to determine if HOV lanes can be included in the design.
- o Analyze the impacts and effectiveness of HOV lanes through "before and after" studies.
- o Expand use of HOV lanes by express bus service through better coordination between highway and transit planning.
- o Provide for HOV enforcement in all HOV lane projects.

8. Streets and Highways: Related Programs (cont.)

d. Service Authority for Freeways and Expressways (SAFE)

Current Description

Legislation authored by state Sen. Rebecca Morgan in 1987 authorized the creation of the first multi-county highway callbox program in the state. The MTC Service Authority for Freeways and Expressways (SAFE) is currently installing 2,000 cellular phones along 600 miles of Bay Area highways in six member counties. These phones will allow stranded motorists to call the California Highway Patrol (CHP) directly for assistance. The program provides the dual benefits of increasing motorist safety and facilitating the removal of highway incidents.

Identified Deficiencies

- o Overall transportation management plan. The SAFE program may not be realizing its full potential due to the absence of an overall transportation management plan. Ideally, such a plan would integrate all of the surveillance, enforcement, incident response, maintenance scheduling and motorist information tasks required to keep the highway system functioning smoothly. Development and implementation of an integrated transportation system management plan is constrained by the fragmentation of responsibilities among various institutions such as Caltrans, cities and counties, and by highway budgets that are biased towards construction instead of operational strategies.

Recommended Actions

- o Develop the Metropolitan Transportation System and a companion operating strategy component.
- o Encourage Caltrans, cities, counties and transit operators to focus on integrating various facets of the transportation system.

8. Streets and Highways: Related Programs (cont.)

e. *Traffic Signal Management Program (TSMP)*

Current Description

One of the most promising strategies for improving mobility along the Bay Area's arterial network is coordinated traffic signal timing, which can help to reduce both traffic congestion and automobile emissions. The Caltrans Fuel Efficient Traffic Signal Management Program (FETSIM) has demonstrated an average annual fuel savings of 4,000-6,000 gallons per intersection and a significant reduction of air pollutant emissions as a result of better traffic flow.

An MTC-sponsored study on traffic signals, A Study of Arterial Operational Improvements, specifically recommended that MTC establish a regional Traffic Signal Management Program (TSMP) and work closely with Caltrans' FETSIM program to implement improvements along major arterials. MTC is currently coordinating two multi-jurisdiction retiming projects in the Bay Area. One project involves retiming about 40 signals along El Camino Real in San Mateo County. The other project involves retiming about 20 signals along San Pablo Avenue in Contra Costa County.

Identified Deficiencies

- o Revenues for traffic signals. Many jurisdictions are unable take advantage of traffic signal phasings that could improve traffic flow because they lack money to replace obsolete traffic signal equipment. Without funds for capital improvement, only marginal improvements in traffic flows can be achieved.
- o Local expertise. A number of jurisdictions have no certified traffic engineers on staff. Consultants are frequently employed to provide needed expertise in the development of intersections and traffic signal plans, but do not remain to oversee long term operation and maintenance of the program. Further, large staff turnover in some jurisdictions diminishes "in-house" proprietary knowledge of traffic signals.
- o Willingness to cooperate. When arterials span several jurisdictions, more work is needed to coordinate signals along these arterials. When two neighboring jurisdictions separately coordinate their signals along an arterial, the timing plan in one may have a negative impact on the other. (This is not an issue along State highways where Caltrans controls signals.)
- o Coordinated MTC/Caltrans planning. Better coordination of traffic signal projects between MTC and Caltrans is required.

Recommended Actions

- o Seek funding for traffic signalization projects. For example, revenues can be obtained through imposed user fees. State legislation is currently being developed which would allow the Bay Area Air Quality Management District to impose up to a \$4 vehicle registration fee. These revenues are to be used to implement air quality improvement programs. Traffic signalization projects have been shown to decrease auto emissions which contribute to air pollution and therefore have been specifically adopted as part of MTC's Transportation Control Measure Plans, both federal (FTCM) and state (STCM):
 - FTCM 24 Expand Signal Timing Program to New Cities
 - FTCM 25 Maintain Existing Signal Timing Programs for Local Streets
 - STCM 12 Improve Arterial Traffic Management
- o Establish traffic signal timing expertise on a county or regional level. This could be a cost-effective way for jurisdictions to have access to a traffic engineering professional.
- o Better coordinate Caltrans and MTC signal retiming projects in the region. Projects submitted for FETSIM grants by cities need to be evaluated and combined with broader systemwide signal programs currently being planned by several Bay Area cities.

8. Streets and Highways: Related Programs (cont.)

f. Pavement Management System (PMS)

Current Description

The MTC Pavement Management System (PMS) is a computer program that systematically organizes and analyzes information about Bay Area cities' and counties' pavement conditions in order to develop the most cost-effective maintenance treatments and strategies. Originally developed with six Bay Area jurisdictions (three cities and three counties) in 1984, the program is now being used by 46 jurisdictions (39 cities and 7 counties) comprising over 50 percent of the total local street and road network in the Bay Area. The PMS also offers numerous supporting activities for its members. These include a computer hotline, quarterly user meetings, a quarterly newsletter and policy-level services to link PMS results to the budgeting process.

A 1990 survey of the MTC Bay Area PMS users found that cities increased their expenditures to maintain local streets and roads by an average of 62 percent since the program's inception in 1984, thereby beginning to reverse a pattern of deferred maintenance.

Identified Deficiencies

- o Revenues for pavement maintenance. Even with the passage of an increase in the state gas tax by California voters in June 1990, additional revenues for Bay Area jurisdictions are needed. The backlog of local streets and roads maintenance projects that developed in the 1970s and early 1980s has yet to be completely addressed.
- o Dissemination of information regarding latest pavement materials, design and methods. PMS can determine the most cost-effective strategy for fixing a distressed pavement, but it does not address the technique behind the actual repair. New technologies on pavement repair are being developed constantly. Local engineers must be apprised of these new developments.
- o Utilization of PMS reports. Development of a tool doesn't guarantee that it gets used. Too many PMS reports are filed on the shelf. Given the high staff turnover in many agencies, a number of jurisdictions that signed up to use the PMS never realize its full potential. Educating new staff can be a long process, especially if the new person has other responsibilities.

Recommended Actions

- o Conduct technology transfer seminars. This will enable local engineers to attend sessions in which they can learn about pavement techniques and keep abreast of changes in pavement design and methods.
- o Conduct training sessions on potential sources of revenue for local agencies. A major thrust of MTC's effort has been

attempting to link the PMS results to local budget processes. MTC can provide users with a Budget Options Report which, among other things, compares needs to expected revenues for pavement maintenance. In most cases local agencies need to secure additional revenue for pavement maintenance activities.

- o Conduct recurring basic PMS training sessions and offer one-on-one training where needed. This enables jurisdictions to deal with staff turnover. Individual sessions with MTC staff also help to break down institutional barriers.

CHAPTER IV:
ACTION ELEMENT

D. MTS ANALYSIS AND RECOMMENDATIONS

9. Transit System/Transfer Points: Related Programs

9. Transit System/Transfer Points: Related Programs

a. *Special Transportation Services/Paratransit*

o Fixed-Route Services

Current Description

MTC policy requires all new buses in fixed route service to be accessible to wheelchair users (MTC Resolution No. 467, August 24, 1977). This policy is consistent with California State law which has mandated accessible services since 1971. As a result, most transit agencies' fleets are 100 percent or nearly 100 percent accessible.

The recently-enacted Americans with Disabilities Act (ADA) also requires accessibility for newly-purchased vehicles, and further requires that certain rapid and light-rail stations be made accessible for use by persons in wheelchairs, and that transit agency personnel be trained to operate vehicles and equipment safely and properly.

Under federal law, elderly and disabled persons are eligible for a discounted fare on any public transit system which receives UMTA Section 9 funds. In the Bay Area, the Regional Transit Connection (RTC) discount card is issued to eligible persons. RTC is sponsored by the Regional Transportation Association, which is staffed and administered by MTC.

Identified Deficiencies

- o Handicapped access. Until fixed route transit is 100% accessible, there will be troublesome gaps in handicapped access to these systems.
- o Maintenance of lifts. Transit systems have been troubled by maintenance of wheelchair lifts which causes significant inconvenience to handicapped patrons.

Recommended Actions

- o Support increased operating revenues for additional services and better maintenance of equipment.
- o Improve access to bus stops in cities and other local jurisdictions.
- o Improve coordination of fixed-route and paratransit services for the mobility impaired.
- o Provide mobility training to transit personnel, as required by transit agency ADA plans.

o Paratransit

Current Description

More than 40 entities, including cities, counties, transit operators, and Consolidated Transportation Services Agencies (CTSAs), are allocated TDA Article 4.5 or 8 funds through MTC for the provision of paratransit services for people who are unable, due to age or a disability, to access conventional public transit. These claimants provide about 2.1 million paratransit trips per year throughout the Bay Area and represent about 38 percent of the paratransit trips provided in the region. The others are provided by social service agencies whose clients attend agency-sponsored programs.

Availability, quality, and the type of service varies greatly among counties, depending on the method of service provision and financial resources. MTC is most directly involved with those services that receive state Transportation Development Act (TDA) funds allocated by the Commission. TDA funds are supplemented with local sales tax funds, city and county general funds, fares, federal grants and contributions from agencies. As funding for social service transportation decreases, however, there is increasing pressure to serve program trips on TDA-funded and other public paratransit systems.

Regional Paratransit Plan. In November 1990, the Commission adopted the Regional Paratransit Plan. This comprehensive planning effort documents the unmet paratransit services and financial needs throughout the nine-county Bay Area, recommends strategies to overcome program and funding deficiencies, and assesses MTC's role in improving the status of paratransit in the Bay Area. The Plan was prepared to be consistent with the provisions of the Americans with Disabilities Act (see II.G).

A set of goals and objectives incorporated into the plan provides guidance for setting priorities and direction, as well as a basis for reviewing local and regional plans and programs. The plan specifically recommends that "Regional Paratransit Goals and Objectives" adopted by the Commission be incorporated into the RTP. They are as follows:

- o Overall Regional Goal. To create an integrated system of paratransit and fixed-route transit service which:
 - is coordinated among jurisdictions,
 - serves the diverse trip making needs of people with transit disabilities,
 - has minimal restrictions on trip making, and
 - is equitable among areas and user groups.
- o Service Goal. To provide a basic level of paratransit service which provides people with transit disabilities travel opportunities comparable to those available to able-bodied users of fixed-route transit services. Objectives which support this goal are:

1. Obtain funding to support a basic level of service in coordination with human service agency funding and services.
 2. Establish services and agreements which allow for trips between counties and other jurisdictions.
 3. Remove restrictive program features.
- o **Equity Goal.** To provide equitable service opportunities for all paratransit users. Objectives which support this goal are:
1. Unify programs where this will improve service quality and management in a logical service area.
 2. Reduce or eliminate variations among programs with respect to eligibility, fares, trip purpose restrictions and limitations on travel destinations.
 3. Establish mechanisms that permit travel on systems throughout the region, such as reciprocal eligibility agreements or regionwide eligibility standards and identification.
 4. Maximize the availability of information about available paratransit to all potential users regardless of residence or agency affiliation.
- o **Efficiency Goal.** To make the most efficient possible use of available funds, consistent with maintaining standards of service quality. Objectives which support this goal are:
1. Promote state-of-the-art practices for service procurement, dispatching and scheduling, driver training, vehicle maintenance, increased shared riding, increased use of taxicabs, and service brokerage.
 2. Coordinate paratransit and fixed-route transit with respect to fares, eligibility, transfer opportunities, and service planning.
 3. Coordinate service among paratransit programs.

Identified Deficiencies

The plan examines in detail the deficiencies existing within the current paratransit system. Despite the extensive efforts of local governments and MTC in recent years to improve and expand paratransit services, existing services fall far short of providing a desirable level of transportation for disabled travelers.

- o **Resources.** Service gaps exist because the need for paratransit exceeds available resources. Because of limited funds, virtually every program has restrictive program features, including:
- waiting lists
 - trip denials
 - long advance reservation requirements
 - trip limits
 - trip purpose restrictions
 - destination limits
 - short hours of service
 - restrictive and inconsistent eligibility rules
 - high and inconsistent fares

Recommended Actions

The key policy and funding recommendations of the Regional Paratransit Plan are as follows:

- o **Secure Additional Funding.** The highest priority specified in the Plan is to secure more revenues for paratransit. MTC should lead the effort in pursuing statewide, regional and federal funding sources, and support the Paratransit Coordinating Councils (PCCs) in securing additional local funds.
- o **Revise Unmet Needs Standard.** The plan recommends that the Commission revise its policy on identifying "unmet transit needs in rural counties which are reasonable to meet" for use in the countywide planning process. Potentially, this could result in no TDA funds being allocated for streets and roads purposes.
- o **Sustain Social Service Agencies Support.** The plan recognizes that maintaining current fund sources is just as important as securing new ones. MTC should take a lead role in coordinating services and funding with social service agencies on a statewide level to ensure the maintenance of social service funding for transportation and to build a coalition for securing new state funding.
- o **Strengthen PCCs.** MTC's role to achieve a strengthened role for PCCs in local paratransit planning includes the setting of guidelines and allocation of funds for staffing, clarifying the relationship between the PCCs and county governments and assisting in local planning efforts to design responsive and cost-effective paratransit services.
- o **Sustain Advisory Groups.** In order to provide for continuing information to, and advice from, concerned citizens, the Commission has established several advisory groups, including the Minority Citizens Advisory Committee (MCAC), the Senior and Disabled Advisors to the Commissioners, and the PCCs. These groups are described in more detail in Appendix A-III.

9. Transit System/Transfer Points: Related Programs (cont.)

b. Transit Service Coordination

Current Description

Public transit services in the Bay Area are provided by 17 major public transit agencies, plus several smaller specialized transit agencies, operating in the nine counties of the region. These agencies are largely independent of one another, and while this has created locally responsive transit systems, coordination between these systems has often been difficult to achieve and maintain.

The first Transit Coordination Evaluation, conducted in 1980, identified major transfer points and regional transit corridors as the focus for interoperator coordination improvements. Since then, MTC has evaluated individual operator efforts to improve fares, schedules, public information, services and physical facilities within this regional network. While it is clear that improvements were made over the years, the rate of progress toward improvements has been slower than desired. The most effective efforts have been those which addressed a coordination problem on a regionwide basis. To this end, MTC established the Regional Coordination Program.

The Regional Coordination Program has four program areas: 1) Fare Coordination, 2) Public Information and Marketing Coordination, 3) Schedule and Service Coordination, and 4) Passenger Facilities Coordination. During fiscal years 1989-91 more than 50 coordination projects were jointly developed by MTC and area transit agencies to improve coordination in the near term, as well as serve as the foundation for future improved and expanded coordination.

1. Regional Coordination Objectives

MTC Resolution No. 620, formulated in cooperation with the transit agencies and adopted in 1978, outlined policy principles of transit fare and service coordination.

These principles were significantly updated in 1990, with the adoption of MTC Resolution Nos. 2137 and 2201, which further clarified regional objectives for fare and schedule coordination. The resolutions responded directly to legislation sponsored by state Sen. Quentin Kopp (Senate Bill 602, Statutes of 1989), which required:

- o MTC to develop rules and regulations for fare and schedule coordination; and
- o All Bay Area transit agencies to enter into revenue-sharing agreements with every connecting system.

This requirement has generated 31 additional fare coordination projects which will result in new interagency transfer agreements, new joint and multi-operator fare instruments (i.e. passes and ticket booths), and more uniform eligibility requirements for discount fare categories among the region's transit agencies.

The adopted regional coordination objectives and current programs designed to meet these objectives are described below.

2. Fare Coordination Objectives:

- Develop a fare instrument which can be used to travel among all Bay Area transit operators.
- Charge similar fares for similar services in the same service area where multiple operators exist.
- Require to the extent practicable, cash fare payment of users no more than once during a one-way trip.
- Standardize passenger and fare categories in level of discount and in their eligibility requirements.
- Ensure automated ticket hardware is regionally compatible.
- Standardize and simplify transfer procedures for all local and regional services for ease of understanding by patrons, consistent with proper accounting and security needs.
- Establish a distribution system to ensure easy access to all local and regional fare instruments and information.

Current Fare Coordination Programs - To achieve these objectives a number of projects were developed in coordination with the region's transit agencies.

The BART PLUS Ticket serves as a flash pass on AC Transit, San Francisco MUNI, SamTrans, SCCTD, CCCTA, Union City Transit, BART Express Bus, Dumbarton Bridge Express local service, and as a stored value discount on BART. The Premium BART PLUS Ticket, scheduled for early 1992, will serve as a flash pass on the long-haul services of Vallejo Transit, Golden Gate Transit, Benicia Transit, Dumbarton Bridge Express transbay service, AC Transit express routes, and SamTrans express and flyer routes in addition to the BART stored value discount. Each ticket is good for a half-month period.

The Universal Ticket currently being developed is designed to make riding more convenient. The ticket initially will be tested in all BART gates and on the Central Contra Costa Transit Authority's (CCCTA) buses and BART's Express buses. The ticket will be a stored value ticket that will work like any BART ticket. The special equipment on board the buses will process the ticket exactly as a BART gate does, so that the one ticket can be used on any one or any combination of the three systems.

The CalTrain Peninsula Pass combines a discounted monthly bus pass with the monthly commuter rail ticket. The pass is honored for unlimited travel on all regular transit services of Santa Clara County Transit, SamTrans, and San Francisco Muni.

The Solano Pass provides unlimited rides in Solano County on Vallejo Transit and Fairfield Transit, and allows interoperator transfers with Benicia Transit and Vacaville Transit. Provisions also exist for the use of the Solano Pass on Vallejo BART Link services that operate to the El Cerrito Del Norte BART station.

The Sonoma SuperPass provides unlimited rides on a monthly basis for operators in Sonoma County. This includes Sonoma County Transit, Santa Rosa City Bus, Golden Gate Transit, Sebastopol Transit, Petaluma Municipal Transit, Cloverdale Transit and Healdsburg Transit. This pass will be the basis for future fare coordination for intercounty travel between Sonoma County operators and Golden Gate Transit in Marin and San Francisco counties.

In San Francisco, Golden Gate Transit has jointly developed 20-Ride ticket books with San Francisco MUNI and SamTrans for facilitating better connections with these operators.

In addition to the newly established joint fare and prepaid fare instruments, numerous new and improved transfer agreements have also been established by operators to facilitate the ease and convenience of interoperator and regional tripmaking.

3. Public Information and Marketing Objectives:

- Formulate and implement standards for use of common symbols, terminology, format, and use of colors on system maps, timetables and other information brochures indicating connection points between systems.
- Provide access to all transit telephone information centers through a single telephone call.
- Formulate standards for the design of fare instruments and for public information on fare equipment for uniform appearance and ease of patron use and operator identification.
- Consolidate information displays and signs at shared transit stops for easy patron identification.
- Formulate a strategy for marketing the regional transit system.

Section IV.D.9.c, "*Transit Marketing*," provides details on current regional marketing efforts designed to meet these objectives, as well as a description of program deficiencies and future recommended actions.

4. Schedule Coordination Objectives

- Define a regional network of transit services, designating regional trunklines and regional transfer centers as the focus for schedule coordination.
- Establish timed-transfers and integrate schedules at all regional transfer centers, with appropriate standards; and use bus beacons or other appropriate technologies for facilitating bus/rail transfers, as appropriate.
- Coordinate interaction of all concerned operators to ensure that independent schedule changes are complementary.

Schedule Coordination Projects: MTC sponsored an Interoperator Schedule Coordination Improvement Study in 1988. Based on study results, MTC adopted new guidelines for interoperator schedule coordination (Resolution No. 2137) in April, 1991. The guidelines set the stage for MTC and the region's transit operators to cooperatively develop a regional schedule coordination plan that will establish schedule coordination standards for regionally significant services at regional transfer centers, determine

operational and capital costs to meet the established standards, develop a funding plan, and establish a schedule of implementation priorities. MTC will continue to work with operators to ensure that individual schedules are complementary.

5. Service Coordination Objectives

- Develop an integrated, multi-modal regional network in which regional and local services complement each other and provide for efficient and continuous transit tripmaking throughout the Bay Area.
- Develop strategies that establish open-door operations as appropriate where two or more bus operators meet.
- Identify, monitor and analyze gaps in the regional network as travel patterns change, and formulate service development strategies for these areas as changes are observed and identified.

Service Coordination Projects - Developing a coordinated transportation network is a key principle of the Metropolitan Transportation System. The analysis of the current MTS has resulted in recommendations to develop a more integrated, multi-modal transportation network, as outlined in the Subarea Analyses of Chapter IV (see Sections 2, 3, 4, 5 and 6). Several of the recommended improvements address transit service gaps that have been identified in the past.

6. Passenger Facilities Coordination

- Develop passenger facilities that effectively support the regional network and are designed to maximize user comfort, convenience and safety.
- Develop passenger facilities that strategically support the regional network by providing modal integration, circulation and distribution. See Table IV-6 for major park and ride facilities in the region.

Passenger Facilities Projects and Programs - Passenger facility coordination is being pursued through a number of projects, which include the addition of parking and improved bus circulation at rail stations, and the construction and expansion of park-and-ride lots.

Identified Deficiencies

- o Fare coordination. The area of fare coordination continues to be a challenge. The multiplicity of transit systems, the varying financial bases, and different fare policies present barriers to achieving interoperator coordination. The passage of SB 602 (Kopp) and the state "blueprint" fund package present new opportunities to respond to some of these challenges.
- o Schedule coordination. While the patron will always want to have the minimum possible delay in transferring between different transit systems, in many areas buses run only every hour or so at certain times of the day.

- o Service coordination. Despite a projected increase in overall transit ridership over the next 20 years, the current and future share of trips made on transit regionwide is clearly overshadowed by trips made by automobile. The availability of transit is, of course, an issue--many services have had to be cut due to lack of sufficient operating revenues. Additional revenues have not been available to fund new services in areas without transit, or to establish transit links between current service areas. The array of future improvements recommended in Section IV.D.6 demonstrates MTC's commitment to greatly enhancing the amount of transit in the long-term.

In the short-term, however, many steps could be made to increase the convenience of using transit. Service coordination is inhibited by:

- Rules that prevent one agency from crossing into another agency's jurisdiction;
 - Impediments to operating "open-door" service; and
 - Identification of appropriate agencies to provide services in corridors outside the direct jurisdiction of any one agency, and securing the funding for those services.
- o Passenger facilities coordination. Passenger facilities, whether for bus, rapid transit, commuter rail or ferry, are often designed with only the one mode in mind. The result can be that access by other modes is included as an afterthought, if at all.

Recommended Actions

Based on progress achieved in the past four years, the future direction of regional coordination will:

- o Identify new service and system connections throughout the region;
- o Improve existing service and system connections throughout the region;
- o Expand formal transfer agreements between operators;
- o Expand joint fare arrangements between operators of contiguous or overlapping service areas.

TABLE IV-6
Transit Operator Park and Ride Lots

Transit Operator	Number of Lots	Location	Total Spaces
BART	24	All BART Stations except downtown Oakland and downtown San Francisco	28,711
BART Express Bus	7	West Contra Costa County, East Contra Costa County, and the Tri-Valley area in Alameda County	1,477
CalTrain	19	Most CalTrain stations	3,686
Golden Gate Transit	26	Along Rte 101 and other locations in Sonoma and Marin counties	2,391
SamTrans	8	Along Rtes 1 and 101, and other locations in San Mateo County	1,414
Santa Clara County Transit District	12	Along Capitol Expwy., Lawrence Expwy., Rte 280, Rte 17, South San Jose LRT stations and other locations	2,054
Vallejo Transit	1	Curtola Parkway and Lemon Street, Vallejo	225
Sonoma County	3	Along Rte 116 in Sonoma County	N/A

9. Transit System/Transfer Points: Related Programs (cont.)

c. *Transit Marketing*

Current Description

The goal of MTC's transit marketing program is to increase ridership on the region's transit systems by increasing public awareness of transit, and improving transit's image as a viable alternative to automobile use.

Traditionally, each transit agency has marketed its own service. With minor adjustments, this situation remains today. Due in some cases to financial status, and in others to a perceived need (or lack of need) for marketing, budgets for transit promotion and information vary widely among agencies. Since the formation of the Regional Transit Association (RTA) in 1977, and its Public Information and Marketing Committee (PIMC), marketing managers have met monthly and discussed service changes, new system maps and materials, planned marketing efforts, etc. This has resulted in improved depiction of neighboring transit services on system maps. For example, virtually all connecting service is now shown on system maps, a significant accomplishment considering the number of agencies in the region.

One of the biggest marketing efforts for transit agencies is telephone information: response to queries from the public on specific transit trips. Like marketing in general, each agency has always operated its own Telephone Information Center (TIC). Most TICs maintain a series of "foreign exchange"¹ lines to provide local telephone service to their customers. Callers needing information on more than one service have had to call more than one TIC. Recently, several operators have become able to automatically forward such calls to the appropriate additional TIC.

In addition to the coordination mentioned above, other regional marketing efforts are supported by the RTA and operated by MTC. The fourth edition of the Regional Transit Guide was published in October 1990. Almost 30 Regional Transit Information Centers have been installed at multi-agency transfer points; several of those contain electronic schedule displays. Transit tickets and passes are being sold to employees at over 150 worksites by the Regional Transit Connection Clearinghouse. In addition, MTC is spearheading a transit voucher program, which will be an easy way for employers to subsidize employees' transit trips.

¹ These lines are rented from the phone company to provide local service to those parts of the service area that would otherwise incur a distance charge.

Identified Deficiencies

While strides have been made to coordinate the marketing efforts of the Bay Area's major transit agencies, several problems remain:

- o Printed materials. Nomenclature, symbols, and mapping conventions are not uniform between agencies. Opportunities to show connecting transit service on printed schedules are still being missed.
- o Media promotions. Single-agency advertising is still being heard on radio, a medium that knows no local boundaries. In general, opportunities are still being missed to promote transit use to major events; information concerning event access by more than one transit agency is especially problematic.
- o Telephone information. Patrons have to figure out which of a large number of telephone numbers to call for information. They need to know the name of the transit agency and figure out the most local of the possible telephone numbers. In addition, many patrons have to call a second number if they need information from more than one agency. Some callers still have to wait long periods because aging telephone equipment "loses" calls.

Recommended Actions

Actions that could improve transit marketing throughout the region include:

- o Improve printed materials. Work towards having printed materials share common nomenclature, symbol systems, and mapping conventions. Coordinate printed schedule information for interagency transfer situations and connecting service.
- o Coordinate media promotions. Base transit use promotions on research; make individual marketing research available to all operators. Include questions on connecting service, as well as regional questions, in individual operators' surveys. Maintain a regional data base of results. Identify funds that can be used for regional promotions in lieu of single-agency ones, especially for electronic media. Keep track of upcoming major events, and jointly promote transit use to events as appropriate. Transit agencies must take the lead to ensure that sufficient service is available. Good service to special events is the best marketing possible; and service unable to cope with event crowds is a marketing disaster.
- o Improve telephone information. Obtain equipment to handle a single 800 number, with the ability to route calls to the appropriate TIC. Encourage all agencies to have a modern automatic call distributor (ACD) that doesn't lose calls. Build a regional schedule data base that can be accessed by any TIC, and augment this with route descriptions, bus stop locations and census address files. Use the resulting data base, when available, to drive on-line information kiosks in public places, and to support an eventual automated telephone information system.

- o Enhance Regional Transit Connection and Transit Voucher Program. Continue to market the Regional Transit Connection (ticket sale by employers). This was adopted as a particular measure in MTC's federal TCM plan for the purpose of reducing auto emissions (FTCM 22--Expand Regional Transit Connection Ticket Distribution). Actively market transit vouchers to employees as well as to employers. Promote existing and new fare and transfer arrangements, including all types of "superpass" instruments. Assure sufficient locations for sale of "superpasses" and other regional instruments, at existing locations, with mail order, and with new outlets if necessary.
- o Promote non-commute transit use. Promote recreational trips that can be taken on transit, as well as shopping and other types of trips. Support the continued use of monthly passes and other allied instruments (BART Plus ticket, etc.) because they make additional bus trips for lunch, evenings, and on weekends "free" to the user, as well as family fares on weekends, etc.

These recommendations, however, will only generate marginal increases in transit use unless they are accompanied by broader mechanisms that will increase transit's competitiveness with the automobile.

Real (and perceived) safety and security problems associated with transit use must be recognized and addressed. Transit riders are also pedestrians, and require new development and redevelopment to make transit use possible, easy, and pleasant (e.g. having entrances or walkways to shops, hotels, etc. from bus or transit stops, having lighting and other amenities for pedestrians, and improving pedestrian crossings at intersections).

These themes are addressed further in section IV.D.10 "Traffic Mitigation/Ridesharing" and section IV.E.2 "Other Supporting Actions."

CHAPTER IV:
ACTION ELEMENT

D. MTS ANALYSIS AND RECOMMENDATIONS

10. Traffic Mitigation/Ridesharing for Commuters

10. Traffic Mitigation/Ridesharing for Commuters

Current Description

The three principal means of traffic mitigation are:

- o mode shift
- o route shift
- o time shift

The present emphasis of traffic mitigation strategies includes the construction of commuter lanes for high occupancy vehicles and the involvement of employers in active efforts to promote ridesharing in the form of carpooling, vanpooling, and transit use.

Specific approaches to carry out traffic mitigation are described below; MTC has embodied many of the strategies in the transportation control measures put forward for federal and state clean air plans (FCTMs and STCMs).

o Enriched Options for the Commuter

- a. Permit flexible scheduling to avoid the peak of the rush hour crush.

Employers throughout the Bay Area have instituted alternative work hours programs including flextime, staggered work hours, compressed work weeks and telecommuting programs. These programs have the effect of eliminating vehicle trips from the peak commute hours, thus improving traffic flow. In addition, flextime programs can support commute alternatives by enabling employees to adjust their work schedules to meet transit and carpool schedules.

- b. Improve available information needed by commuters to join a carpool.
- c. Better organize efforts to initiate vanpool fleets and keep them operating.
- d. Tailor bus schedules to serve suburban worksites more effectively.

To accomplish items b and c, Caltrans and MTC support RIDES for Bay Area Commuters and the Solano Commuter Information Program to provide personalized carpool and vanpool assistance to commuters (FCTM 5). MTC has also assisted RIDES in upgrading its computerized matching system to assist prospective carpool riders.

o Incentives to Change Travel Behavior

- a. Provide "commuter lanes" for buses, carpools, and vanpools.

Several TCMs address this strategy: FCTM 4, FCTM 20, and STCM 8.

- b. Provide preferential parking for carpools and vanpools.

Two federal TCMs address this program: FTCM 5 (preferential parking) and FTCM 8 (shared use park-and-ride lots).

- c. Sell passes at a special discount and subsidize carpools and vanpools.
 - FTCM 21 - Regional Transit Connection
 - STCM 13 - Reduced transit fares
 - STCM 14 - Vanpool liability insurance
 - STCM 15 - Provide carpool incentives
- d. Provide HOV bypass lanes at metered freeway ramps.
 - FTCM 4 - HOV lanes and ramp metering
- o Concerted Action by Government and the Private Sector
 - a. Provide guidance concerning ordinances that oblige employers to adopt and implement traffic mitigation plans.

MTC has assisted in developing guidance for local governments who are considering adoption of an employer-based trip reduction ordinance:

- FTCM 10 - In 1989 MTC developed a report that was widely distributed called the Traffic Mitigation Reference Guide.
- FTCM 27 and 28 - Several MTC guidance reports have been prepared to assist counties in understanding current practices and effectiveness of ordinances as a traffic mitigation strategy: "Key Considerations for Developing Local TSM Programs" (1988) and "What We Know and Don't Know About Traffic Mitigation Measures" (1990). In addition, MTC developed a Model Trip Reduction Ordinance (TRO) which has been distributed to cities, counties, and congestion management agencies. This ordinance is intended to satisfy multiple California Clean Air Act and Congestion Management Program objectives. The authority to require such an ordinance rests with the Bay Area Air Quality Management District and CMP agencies in each county.

Employer trip reduction ordinances have been adopted by a number of Bay Area jurisdictions: Belmont, Berkeley, Clayton, Concord, Danville, Foster City, Pleasanton, Redwood City, and Contra Costa County. Santa Clara County and the five cities in Santa Clara County's Golden Triangle (Milpitas, Mountain View, Palo Alto, San Jose and Sunnyvale) recently adopted trip reduction ordinances. Most of the ordinances apply to both new and existing development and require targeted employers to provide commute alternatives information, appoint a Transportation Coordinator, survey employer commute modes, and provide a program of measures designed to encourage commute alternatives use.

The following jurisdictions are preparing ordinances for possible adoption: Martinez, Millbrae, Orinda, and Santa Rosa. In addition, the counties of Marin and Napa are considering ordinance adoption.

- b. Designate worksite Transportation Coordinators.
- c. Provide customized bus service on a subscription basis.
- d. Personalize placement in carpools and vanpools.
- e. Provide training for worksite coordinators.
- f. Pool resources of multi-employer task forces and Traffic Management Associations.

MTC's efforts are defined by FTCM 9, which supports RIDES for Bay Area Commuters activities and, in particular, provides continuing financial support for employer transportation coordinator training and for monitoring of employer commute patterns. Additional employer-related TCMs were added during the state TCM plan development, including STCM 1 - Expand Employer Assistance Programs. FTCM 23 - Employer Audits, provides for the review of several major employer trip reduction programs, assessment of potential improvements, and the identification of a group of "pacesetter" companies to serve as examples for other employers in the region.

Identified Deficiencies

Increased vehicle occupancy is the principal emphasis of local mitigation efforts, but the prospects for significant mode shift are limited. In effect, we know now that:

- o Employer based programs have achieved increased use of commute alternatives where conditions are favorable and public agencies and employers have been able to sustain them. However, favorable conditions are not the norm; commitment has been limited, and results spotty.
- o Mode shift changes are not amenable to a quick fix and require constant work because of employee turnover, backsliding to former modes, general changes in transportation costs and services, and other obstacles.
- o Even if employer effort and commitment could be increased significantly, the impact that can be expected from employer-based ridesharing programs is inherently limited because many commute trips are of short distance and brief duration.

Recommended Actions

An employer-based trip reduction rule is expected from the Air District as part of the new state Clean Air Plan, and it would take effect in mid-1993 (STCM 2). This rule would delegate authority to local jurisdictions to require employers to implement trip reduction programs for their employees. Trip reduction ordinances adopted to fulfill Congestion

Management Program requirements would not necessarily exempt cities and counties from the Air District rule. Because the region is likely to be designated a "severe" air quality attainment area under the definitions of the California Clean Air Act, the region may have to achieve an average vehicle ridership of 1.5 during peak commute hours by 1999.

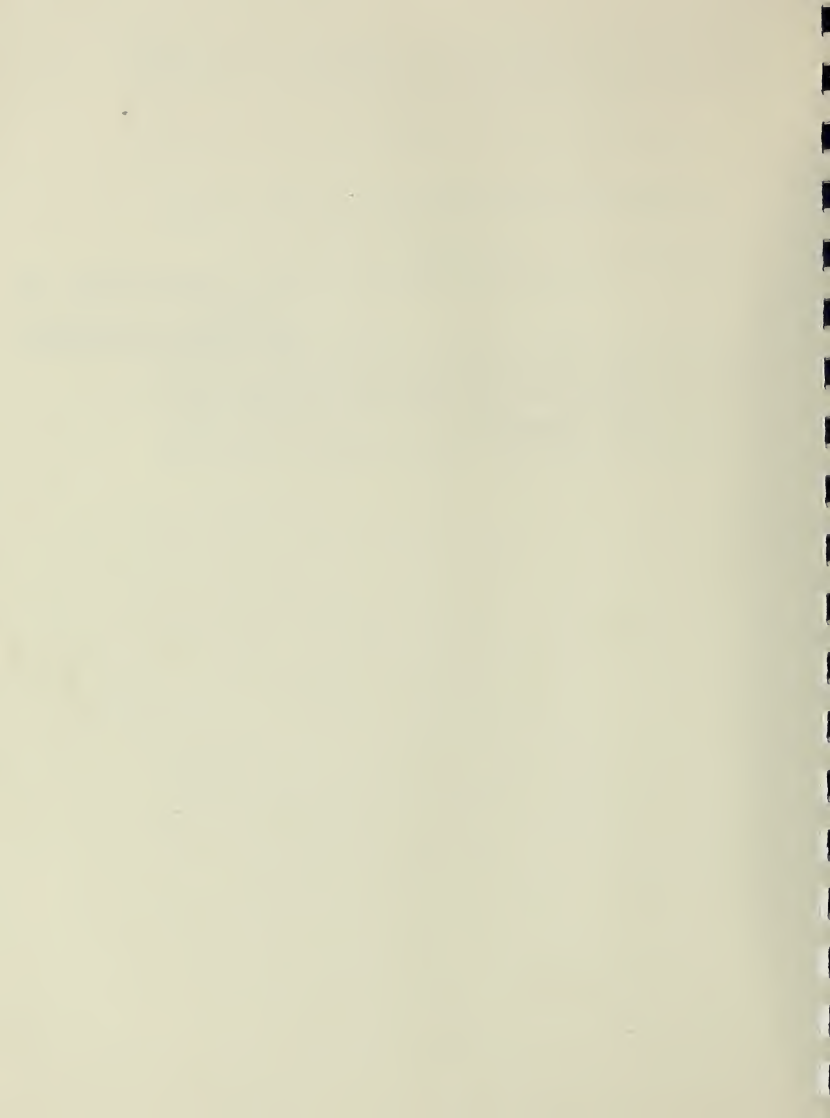
The following actions are recommended to reinforce TSM strategies and measures on a regional basis:

- o Continue to monitor the effects of employer-based trip reduction programs in the Bay Area and in other regions. More education is needed in the following areas:
 - pricing or market place oriented measures, such as employer parking fees and transportation allowances;
 - how to organize small employers for implementing trip reduction programs;
 - telecommuting programs.
- o Coordinate TSM strategies with land use planning. Cities should be encouraged to facilitate commute alternatives use through their land use policies. New development should be concentrated near trunkline transit corridors and site design should be sensitive to transit, pedestrian, and bicycle use. The implementation issues associated with enhanced transportation/land use coordination are discussed in more detail in Chapter IV, Section E, "Other Supporting Actions."

CHAPTER IV:
ACTION ELEMENT

D. MTS ANALYSIS AND RECOMMENDATIONS

11. Bicycles



11. Bicycles

Current Description

Nearly all bicycle trips occur on local streets throughout the region. Caltrans permits bicycle travel on very limited portions of Bay Area freeways where continuous access does not exist on local streets. Bicycles are permitted on the Dumbarton, Golden Gate (with time restrictions) and Antioch bridges. Caltrans also operates scheduled shuttle service across the Bay Bridge and the Benicia-Martinez Bridge. In addition, some transit operators carry bicycles during specified times of the day. For the most part, the planning and implementation of bicycle facilities is a local (city, county and transit agency) function. Caltrans has a role in planning and implementing bicycle projects in conjunction with its highway facilities. At the regional level, the Association of Bay Area Governments (ABAG) is implementing a Bay Trail to link existing local paths and coordinate new paths for a continuous bicycle and pedestrian path around San Francisco and San Pablo Bays.

MTC allocates Transportation Development Act (TDA) Article 3 funds totalling almost \$3.5 million per year to cities and counties for construction of bicycle and pedestrian facilities. MTC allocation guidelines give priority to projects that "increase safety, security and efficiency of bicycle and pedestrian travel, and to the extent practical, provide for a coordinated system."

Proposition 116, passed by the voters in June 1990, contains a total of \$20 million statewide for allocation "to local agencies for capital outlay for bicycle improvement projects which improve safety and convenience for bicycle commuters." The California Transportation Commission (CTC) is currently developing guidelines for this program.

Identified Deficiencies

Less than 2 percent of all workers commute by bicycle according to 1980 census data; most of these trips are less than five miles. Safe and direct routes and secure bicycle parking facilities at activity centers, such as employment centers, multi-family housing developments and commercial areas, are emphasized most by bicyclists. Strategies advocated by bicycle interests that would provide more convenient access for local bicycle trips include:

- o Elimination of safety hazards or barriers to bicycle travel.
- o Roadway improvements that provide shared use with bicycles or construction of continuous bikeways to provide direct routes to activity centers where access did not previously exist or was hazardous.
- o Secure parking facilities at activity areas, transit terminals and park-and-ride lots.
- o Shower facilities at places of employment.

Bridge access continues to be a barrier to bicyclists crossing the Bay. A means for bicycles to cross existing and new Bay Bridges needs to be provided. There are also several highways where bicycle travel is

prohibited or hazardous and the parallel arterial is circuitous or non-existent; these problem areas need to be identified and remedied.

Recommended Actions

Integrate bicycle facilities, safety and education programs into employer-sponsored commute alternatives programs. School programs promoting bicycle use and safety should also be organized and encouraged. Bicycle advocacy groups, such as the Regional Bicycle Advisory Committee, have played a role in educating traffic engineers and planners on the needs of bicyclists in the Bay Area.

Examine bicycle use as one of a number of strategies to reduce auto trips. Cities and counties will be taking a more central role in travel demand management as a result of the state Congestion Management Program (CMP) statute. MTC's Transportation Control Measure (TCM) Plan for the State Clean Air Plan contains a number of bicycle-related recommendations. Bicycle improvements envisioned in the TCM plan include:

- o Increase the number of local and regional bike routes, bike lanes, and/or bike paths to shopping, employment areas, cultural/educational centers, and civic centers; promote adequate lane widths for bicycles on roadways; permit bicycles on freeway shoulders where no alternate parallel route exists; adjust signal equipment and provide pavement marking for detecting bikes (STCMs 5&9).
- o Expand carrying capability on buses, ferries and rail systems for bikes (STCM 9).
- o Provide means for bicycles to cross all existing Bay bridges; encourage Caltrans to provide direct access for bicycles on the Benicia-Martinez and Richmond-San Rafael Bridges; provide direct access for bicycles on any new or modified bridge construction (STCM 9).
- o Maximize the accessibility and convenience of any facility, building structure or installation in site design considerations to include well-designed bike routes and parking (STCM 16).
- o Adopt Trip Reduction Ordinances that include employer-based programs that provide on-site bicycle facilities (STCM 2).

MTC will work closely with the CTC and Caltrans to maximize the allocation of available state bicycle funds, including Proposition 116, to the Bay Area. MTC will allocate TDA Article 3 funds to projects that significantly increase the safety and convenience of bicycle travel. To receive these funds, bicycle advisory committees and development of comprehensive bicycle plans will be required in each city and county. Further, MTC will encourage all new and reconstructed highway, roadway and transit facilities to consider bicycle transportation in their design, and to implement them where required by statute.

CHAPTER IV:
ACTION ELEMENT

D. MTS ANALYSIS AND RECOMMENDATIONS

12. Airports, Seaports and Freight Transport

12. Airports, Seaports and Freight Transport

MTC prepares and maintains special plans for airports and seaports in the Bay Area. The Regional Airport System Plan was completed in 1980 and is currently being updated, with its completion expected in the Spring of 1992. The Seaport Plan was completed in 1982, in cooperation with the Bay Conservation and Development Commission (BCDC), and was revised in 1988. Each of these plans is intended to provide a regional framework for evaluating airport/seaport improvements to facilities in the context of expected demand for air and maritime facilities, alternatives for providing new capacity where it is needed, potential means to make the system operate more effectively, and environmental concerns related to noise, air quality, and impacts on the Bay.

People and goods move through the region by air, sea, rail, and truck. MTC's plan does not cover the private investment needed for improved truck and rail facilities. These plans are developed by the private companies which provide those services. Of particular interest, however, is the manner in which truck traffic uses the Metropolitan Transportation System (MTS). This interest stems both from economics -- to enable freight and service delivery vehicles to make their trips without incurring excessive congestion costs -- as well as from the impact of freight movements on the capacity of the system available for personal travel. Because of these interests, MTC has evaluated the routes most commonly used for truck traffic to help it in assessing priorities for street and highway investment.

a. Airports

Current Description

The regional airport system serves a variety of users including domestic and international air travelers, general aviation aircraft owners, and air cargo shippers. Scheduled airline service is currently provided at San Francisco International Airport (64 percent of Bay Area passenger flights and 39 percent of cargo flights), Oakland International (13 percent and 56 percent), San Jose International (22 percent and 6 percent), and Buchanan Field (in Contra Costa County) and Sonoma County Airport (less than 1 percent). The number of travelers has grown more than 75 percent in the 1980s, during which time major terminal expansion projects were completed at San Francisco, Oakland, and San Jose airports and new airline service was initiated at Buchanan Field and Sonoma County Airport for California corridor passengers. No new runways were constructed during this period.

General aviation activity is concentrated at 17 major general aviation airports owned and operated by cities, counties, and airport authorities. There are 14 privately owned general aviation airports of which three are primarily used by gliders. Federal military airports are also considered in the regional airport system plan in terms of their impact on airspace use and their potential for civilian use, especially if the U.S. Department of Defense were to relinquish some military airports.

The shipment of air cargo, particularly in the small package area, has also grown dramatically in the 1980s and air cargo facilities have been expanded at all three commercial airports, with significant new facilities being added at Oakland Airport.

Identified Deficiencies

The airport system suffers several deficiencies which are currently being addressed in the update of the Regional Airport System Plan:

Runway and airspace capacity. These will be prominent concerns if the pace of air travel growth continues as it did in the 1980s. The Bay Area's airspace is one of the most complex airspace environments in the country due to the large number of airports which ring the Bay. During poor weather conditions, airspace capacity is diminished as air traffic controllers need to provide greater separation between aircraft for safety. Significant delays currently occur at San Francisco International Airport during instrument flight rule (IFR) weather. To provide new runway capacity, all three major air carrier airports are considering major terminal expansion and runway modifications in the form of new or extended runways; some new runways proposed would require further filling of the Bay.

Ground access and system capacity. Capacity constraints can also be addressed through other strategies; those which will be analyzed in the Regional Airport System Plan include congestion pricing, expanded commercial service at some general aviation airports, improved general aviation reliever airports to take traffic away from the commercial airports, diversion of demand to other modes such as high-speed rail for intrastate trips, and construction of one or more new airports. Ground access capacity will also be of concern as airport traffic increases, leading to a need to provide better bus and rail transit connections to the region's airports.

Revenue for airport operations and maintenance. General aviation activity has been static through most of the 1980s due to rising costs of owning and operating general aviation aircraft, while corporate aviation activity has increased. While the need for new general aviation runways and parking capacity has diminished, several private airports have closed and some public airports are under community pressure to close or restrict operations. Revenues for airport operations and maintenance are declining with the downturn in activity. Most airports require protection from urban encroachment which may consist of incompatible development under airport flight paths or the creation of tall structures near these flight paths.

Ability to expand. Finally, airport activity produces noise and air pollution, both of concern to nearby communities. Further expansion of airport activity without additional noise impacts may be an achievable goal with conversion of the airline fleet to quieter planes and to those with smaller noise footprint areas. Although generating considerably less noise, general aviation airports also must maintain their good neighbor status.

Recommended Actions

- o Complete the Regional Airport System Plan update and the recommendations from this plan.
- o Continue to support the policies in the current regional airport plan until further revised.
- o Continue to advocate, as is called for in the current regional airport plan, a more balanced pattern of service among the major air carrier airports to
 - increase passenger convenience
 - make use of existing underutilized airport capacity
 - minimize population exposure to adverse noise impacts
 - minimize airspace delays for airlines and air passengers
 - minimize energy and air pollution generated by air passengers and air cargo shippers accessing airports.
- o Evaluate potential uses of military airports that may be declared to be in excess of military requirements.
- o State legislation requires MTC to have an airport ground access element in the RTP. Rail connections to the airports consist of: San Francisco Airport (planned BART extension from Colma), Oakland Airport (planned automated guideway connection to BART), and San Jose Airport (existing shuttle from light rail). This element reflects the region's interest in accommodating future ground access demand by transit to the largest extent possible. The demand will be further developed in the Regional Airport System Plan Update.
- o Establish a high priority to protect airports from further encroachment by development on the ground or into the airspace which may create additional noise or safety problems.

12. Airports, Seaports and Freight Transport (cont.)

b. Seaports

Current Description

There are six publicly-used ports in the San Francisco Bay Area: San Francisco, Oakland, Alameda/Encinal, Richmond, Redwood City, and Benicia. Each of these ports was developed to provide a needed cargo role and is served by one or more steamship lines.

The Port of Oakland, with 12 terminals, is the region's principal container port serving 90 percent of the general cargo traffic. San Francisco's port provides container cargo facilities at two major terminals and is the major break bulk port in the region. Other ports specialize in different types of cargo: Encinal (steel), Redwood City (scrap and limestone), and Benicia (auto imports). Richmond's port was another container facility, but had no container activity. Each port is served by one or more railroad yards or spur lines.

Identified Deficiencies

Ability to accommodate containerized cargo. Containerized cargo is forecast to increase to four times its present volume by the year 2010. Shipments of automobiles, iron and steel scrap, and grain exports are all expected to increase, but containerized cargo represents the majority of the growth.

Terminal facilities. Handling future volumes of marine cargo will require new terminal facilities in some cases, increased channel depth for larger ships, additional backup land for container storage, and productivity improvements at individual terminals. Major planning concerns are:

- Cost: at today's cost of about \$40 million to develop a single container terminal berth, the long-range investment in new marine terminal facilities could exceed \$1 billion.
- Bay fill for new ports.
- Channel deepening and disposition of dredge spoils.
- Truck and rail access.

Recommended Actions

MTC and BDCD have addressed the seaport planning requirements in the Seaport Plan. This plan presents several proposals:

- o **Construct new terminals.** To accommodate the forecast increase in dry cargo (containerized and other cargo), new marine terminals will be required. Some of the increased demand for container handling capacity may be accommodated by combination terminals handling both container and break bulk cargo. The plan identifies sites where near term and long term port expansion could take place. Should a military port site become available, it is to be included among those sites designated for near term development.

o **Productivity Improvements**

- Improve channels. While channel deepening would incur a cost, it appears to be substantially less costly than the investment in new marine terminals. Deepening the channels to the ports of Oakland, Richmond and Benicia to accommodate both existing and future vessels, or increasing terminal backland area where it constrains capacity would be beneficial. (Investment in deeper channels, however, would not necessarily mean that new terminal, infrastructure or equipment improvements would not be required at some point to accommodate growth.)
- Increase backland areas for container storage and operations in some ports to accommodate future demand.
- Increase terminal productivity to improve capacity with minimum adverse environmental impacts.

o **Improve port access.** Specific actions to improve the efficiency of the ground transportation system include:

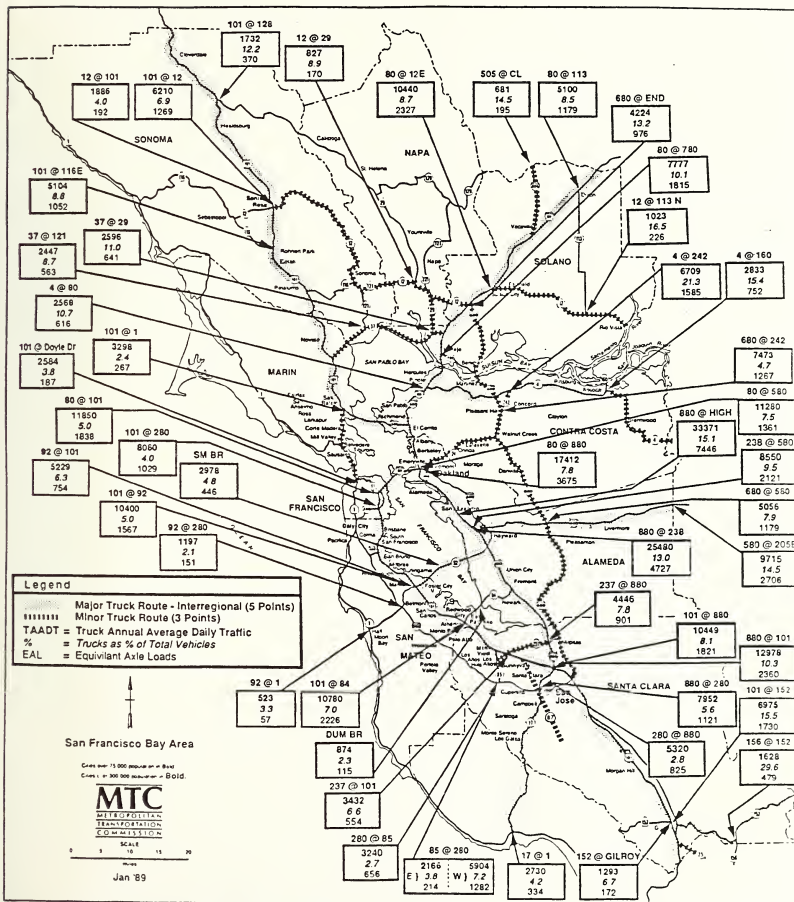
- The development of railcar loading/unloading facilities at or near container terminals and to rail intermodal ramps
- The transportation of cargo to and from marine terminals during the night, if increased terminal operating costs are offset by reduced congestion costs
- Provision of dedicated and separated roadways for drayage between marine terminals and rail yards.

c. Other Freight Concerns

MTC has prepared a map of routes in the region which carry significant volumes of truck traffic. This map will be used to assess investment priorities in MTC's highway program contained in the Regional Transportation Improvement Program (RTIP) (see Figure IV-24).

Goods Movement - Efficient goods movement is an essential component of the RTP. Most of the activities supporting goods service, including the provision of rail services, are privately operated. MTC has certain responsibilities, described elsewhere in this plan, regarding seaports and airports. MTC's primary focus is to see that the MTS can adequately accommodate freight traffic. In urban areas, where highway expansion is limited or impossible, this means managing and operating the system in a manner that provides for efficient freight movement.

Figure IV - 24
Truck Routes Used In RTIP Scoring



Data from: 1987 Annual Average Daily Truck Traffic on the California State Highway System, Caltrans.
 Note: Routes without designation will be examined on a case by case basis.

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- 1. MTC Recommended Actions**
- 2. Other Supporting Actions**
- 3. Future Issues for the RTP**

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1. MTC Recommended Actions

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1. MTC Recommended Actions

Implementing the many recommendations presented in this Action Element presents a challenge to the Commission and its transportation partners. The most immediate task lying ahead for MTC will be identifying the full transportation improvement strategy for the year 2010 -- a process that carries over to the next Regional Transportation Plan Update. As discussed in IV.D.1., the RTP recommends a base set of highway projects and transit services as programmed in the FY 1992-96 Transportation Improvement Program (TIP), including the first tier of rail capital improvement projects identified in Resolution 1876.

In developing this RTP, the Commission undertook a careful decisionmaking process that involved the following steps:

- o Full consideration of the Final Environmental Impact Report (FEIR) for the Regional Transportation Plan.

The FEIR contains valuable information on the mobility, air quality, and other physical and social impacts associated with the possible implementation of various transportation packages. MTC will fully evaluate these impacts, and use this information as a primary basis for selecting its preferred 2010 transportation strategy in the next Regional Transportation Plan. If necessary, supplemental environmental analysis will be conducted to ensure that the environmental impacts of the Commission's eventual recommended improvement package are disclosed, and proper mitigations identified.

- o Full consideration of public comments on the EIR and the 1991 RTP recommendations.

This RTP represents a significant, new step in transportation planning for the Bay Area. The definition of a Metropolitan Transportation System provides a comprehensive framework for addressing the tradeoffs that must be made as the Commission identifies future MTS improvements as part of the next Regional Transportation Plan Update. Public review and comment regarding the MTS concept, the EIR's evaluation of potential MTS improvements, and the Commission's pending review of those improvement options will help assure that the 2010 strategy represents a balanced, reasonable, and deliverable approach.

- o Development of a sound financing strategy.

The successful implementation of the RTP hinges on the ability to finance the recommended improvements. Chapter V, "Financial Element" points out that while existing revenue sources are projected to be sufficient to fund the Tier 1 RTP recommendations, new sources of revenues must be secured in order to implement significant additional MTS improvements. The Chapter outlines a set of principles for guiding the Commission's advocacy for these new revenues.

o Pursuit of a comprehensive planning process

In implementing major MTS capital investments and the operating programs that support them, MTC must maintain a comprehensive planning process that involves:

- **Integrated planning** that balances investments across different transportation modes, coordinates local programs to ensure regional consistency, and builds a "regional consensus" with the many different agencies that must implement transportation improvements and services within the San Francisco Bay Area.
- **Program monitoring and evaluation** that enables the MTC to track the effectiveness of its recommended programs as they come to fruition, and allows the Commission the opportunity to adjust programs and services to respond to changing economic and political conditions.
- **Outreach and information** to keep the Commission abreast of emerging transportation policies and actions at the local, state, and federal level; and conversely keep the Commission's various constituencies informed of MTC actions and their implications.

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2. Other Supporting Actions

2. Other Supporting Actions

Over the next two decades, the efficiency, effectiveness, and environmental consequences of the region's transportation system will depend on a number of supporting actions by other public agencies, the Legislature, and public/private partnerships. Because it is uncertain how some of these supporting actions will come into play, the RTP suggests those areas that are most likely to have a significant impact on the Bay Area's response to future transportation problems. These areas can be broken down into the following categories:

- o effect of new vehicle and highway operations technology on the productivity of the MTS
- o local land use decisions that produce more efficient travel patterns in terms of travel options and the overall need to make trips
- o new initiatives to manage street and highway congestion through pricing techniques
- o better use of the authority of other agencies to accomplish mobility and environmental goals

A brief discussion of each of these topics is provided to indicate the directions that would support the recommendations in the RTP.

a. *New Technologies*

Major efforts are underway to use technology to alleviate capacity, safety, and environmental problems associated with urban transportation systems. This technology initiative is being carved out by a host of private and governmental parties. While no one has a crystal ball to foretell the results of this research and development work, some trends are already apparent. They fall into four categories:

- o Telecommunications
- o Computerized traffic management involving hardware in cars and in the roadbed itself
- o Less polluting, more fuel-efficient cars for personal transportation
- o New technologies for transporting passengers and freight over long distances, such as
 - high speed rail, perhaps using magnetic levitation
 - tiltrotor aircraft that can fly like a plane but land like a helicopter
 - larger ships for handling maritime cargo
 - "double stack" trains to increase the efficiency of railroad operations

Telecommunications would substitute telephone "travel" for auto travel, allowing some workers to either conduct their business at home or at satellite work centers close to their homes. The technology related issues are of lesser significance compared to the basic questions that arise concerning both employer and worker willingness to pursue this opportunity.

In terms of traffic management strategies, new ways are being developed to coordinate operations of highways and adjacent arterials. A key feature of the "smart street" concept is the dissemination of up-to-the-minute information on existing traffic conditions to drivers and traffic control centers. Drivers would receive traffic information through changeable message signs, radio broadcasts, and telephones. Traffic managers would control signal timing, ramp metering rates, and driver information to redirect travelers off congested freeways to alternate arterial routes, thus improving the overall flow of travel through a congested corridor.

Instituting new traffic control strategies would require unprecedented cooperation among Bay Area counties and cities, regional agencies, and the Department of Transportation. Such cooperation is crucial to establish, operate, and maintain advanced traffic management systems that cross jurisdictional boundaries.

The next step up in traffic management would rely on intelligent vehicles and highways (Intelligent Vehicle/Highway System (IVHS)) to develop a partially or fully-automated highway to control the movement of cars; implementation most likely will be well beyond the RTP horizon.

Cars of the future will be considerably less polluting, initially through better emission control technology and later either from alternative fuels (methanol-blended fuel, for instance) or electric battery-powered cars.

Long distance transportation technologies for people and freight are being developed. Some are awaiting greater market interest and proof of financial feasibility (magnetic levitation trains and tiltrotor aircraft, for example); others, such as double-stack railroad cars carrying two containers and larger container cargo ships, are already in service.

Technology advances often pose difficult problems for which answers may not be readily available. For example, there are liability questions arising from the application of previously untried technologies, particularly in the case of injury resulting from the failure of automatic system technologies. The threat of litigation and the issues of responsibility can frustrate putting new innovations into place.

Other issues that must be addressed include coordination of transportation technology research, development of common standards and compatible systems, the need for huge front-end expenditures of research and development funds, and demonstrating the public acceptability of new transportation technologies.

Finally, history has shown us that these technological changes will occur incrementally over extended periods. Radical technological "solutions" to the "problem" are not likely.

2. Other Supporting Actions (cont'd)

b. Transportation and Land Use

The region's land use patterns are controlled by over 100 jurisdictions with their own goals and objectives for growth and their own development policies for use of land. At a basic level, these goals express each community's views on how to maintain a livable environment for their citizens and maintain an adequate financial base to support a wide range of public services. At a regional level, land use issues are framed by other sets of concerns that relate to the development of the larger Bay Area community. The Association of Bay Area Governments (ABAG) Regional Plan speaks to many of these issues, which include the health of the regional economy, providing adequate and affordable housing, protecting open space, and minimizing adverse regional environmental impacts, such as air pollution.

The RTP is intended to support regional and local land use plans by identifying the transit and highway investments best suited to efficiently accommodate both a growing region and one in which traditional locations of jobs and housing are rapidly changing. To a large extent, this planning reflects the land use desires of local governments which develop policies that are incorporated in ABAG's future demographic projections for the region. Anticipating future travel patterns, even armed with the best available demographic projections, is a particular challenge since large transportation projects can take years to complete, while new development policies can be put in place literally overnight.

The role of urban and suburban areas of the Bay Area has changed significantly in the last decade, as has the nine-county Bay Area's relationship to the adjoining counties. Efforts to coordinate land use and transportation planning must be intensified. One major challenge is to ensure that the region fills the housing needs of an expanding economy. The Bay Area has not fared well at this effort as illustrated by the rapid growth of affordable housing outside the existing nine-county region. New approaches are needed to address transportation and housing needs. As an example of one approach, ABAG and MTC cooperated in the analysis of how land-use shifts from commercially zoned properties to residential usage adjacent to existing and proposed rapid rail, commuter rail, and light rail lines can affect both transit ridership and provide housing in the central portions of the Bay Area (Increasing Transit Ridership and the Efficiency of Land Use While Maximizing Economic Potential, ABAG Work Paper 90-2, October, 1990). The study shows that in-commuting into the Bay Area could be significantly reduced and new housing stock created. This transit/land use approach offers a dual solution to a portion of our land use and transportation problems that is both environmentally sound and helps sustain diversity in the region's economy.

The basic tenets of regional planning must be strengthened in the future by greater coordination between land use and transportation planning. This implies a healthy economic development of the region's cities, expanding economic centers outside the traditional core and careful planning of the environmentally sensitive rural fringe. There is a growing need to provide housing at a density that supports fixed rail or bus transit and increases affordability. Reducing auto dependence should be a major objective. Balanced transportation

planning, emphasizing a good road and public transportation network, is essential at the outset of development planning. Building on these tenets, we propose the following strategies for urban, suburban and rural areas of the region.

Land use/transportation strategies for the urban areas are to:

- o Support economic opportunities in the major urban areas by maintaining and improving the public transportation system for internal circulation and the regional transit system for connections to areas that provide housing for city workers. For economic reasons, the cost of commuting to city centers must remain competitive with the cost of transportation to competing job centers through the region. Continuing to improve the regional transportation connections also benefits workers who live in the city and commute to new jobs in suburban areas, the so-called "reverse" commute.
- o Support development of new housing within cities to facilitate job growth and take advantage of a well developed public transportation system.
- o Encourage improved arterial operations within cities (e.g., coordinated signal timing programs) to foster the efficient movement of people, goods and services and to minimize air pollution from cars and trucks.
- o Ensure a transit and pedestrian oriented urban design for new development.

For suburban areas, strategies that should be pursued to better coordinate land use and transportation planning are to:

- o Ensure that suburban freeway capacity is not oversubscribed by future development.
- o Consider phasing land use development with transportation capacity over time to account for the development lead time of major transportation projects.
- o Support efforts to bring a larger number of residential units and jobs closer to regional transit systems where they exist.
- o Identify selected transit corridors for intensified development in suburban areas.
- o Promote site design of new development for transit access (where served by transit), preferential parking for carpools and vanpools, and pedestrian and bicycle access to nearby housing areas.
- o Cluster shops, restaurants and public facilities in compact areas to maximize transit potential, encourage pedestrian traffic, and reduce the overall number of auto trips.
- o Coordinate signals on major thoroughfares to minimize congestion and air pollution on high volume cross-town routes and freeway connectors.

- o Consider development of expressways and parkways that combine different land use functions along a single route, such as parks (open space), cluster development and housing.

For rural areas, some of the same suburban strategies apply:

- o Ensure that freeway capacity is not oversubscribed and provide phasing mechanisms for new capacity and future development.
- o Carefully review new freeways and roadways on the urban fringes as to their ultimate effect on the character of the land, assuming that new accessibility to land will pressure local political jurisdictions to change the existing land use designations to more complex developments.
- o In areas that still have the majority of their growth ahead of them, plan the roadway system in a way that allows adequate representation of different classes of roads, including expressways, parkways, arterials, and collectors (see comments above about parkways and expressways) and allows for efficient future transit service.

These strategies have only been scoped out in broad terms to provide some vision of future strategies; however, the margin for working on these strategies is limited and their implementation is highly dependent on plans of cities, counties and Congestion Management Program Agencies (see Chapter II). An important role for the Commission will be to continue to provide information on the transportation implications of new proposals as they emerge.

2. Other Supporting Actions (cont.)

c. *Pricing the Transportation System*

A strategy that is not available to the Bay Area to manage congestion is a comprehensive system to price roads in a manner similar to the the Bay bridges. Pricing strategies are considered "supporting actions" because new authority would need to be granted to some entity by the Legislature to implement them. Congestion pricing has been recommended by the Bay Area Economic Forum, a private sector business advocacy group. Having motorists pay for the use of roads by time of day may be the most efficient method to alleviate excess demand for travel when the demand exceeds the capacity of the transportation system. Congestion pricing revenues can also be used to finance further mobility improvements in the form of more corridor transit service, additional carpool lanes, or traffic operations equipment to better manage the flow of traffic. Air quality benefits would accrue through the effect on overall travel demand and reduced congestion.

A variety of transportation pricing proposals have been included in the state Clean Air Plan that will be adopted by the Bay Area Air Quality Management District in the fall of 1991. The measures would be needed if the region is to dramatically lower smog levels in the next decade. However, it is also clear that there is little popular support for such actions at the present time. To better understand the merits of congestion pricing in its different forms, other issues will need to be further explored:

- o An implementation strategy that would minimize diversion of traffic from freeways that are priced to other facilities that are not priced.
- o A technology demonstration that would prove how cars could be electronically monitored and later "billed" for use of the roads.
- o The legal impacts of electronic monitoring of an individual vehicle's location.
- o An administration plan for billing and fund collection.
- o Mobility plans for subregions or corridors to define the use of pricing revenues.
- o An equity plan to address effects of higher auto fees on lower income households.

2. Other Supporting Actions (cont.)

d. *Support From Other Agencies and Legislative Bodies*

Of particular importance to the success of the RTP is the coordinated actions of other agencies that have powers in the following areas: facilities for airports, seaports, and transit; trip reduction plans and programs for employers and other sources of auto traffic; pricing and funding authority; and general congestion management authority.

These broad powers are distributed over a number of Bay Area agencies and legislative bodies, notably the Bay Conservation and Development Commission (BCDC), the Bay Area Air Quality Management District (BAAQMD), Congestion Management Agencies, cities and counties, and the state Legislature. Chapter II discussed the broad rules and responsibilities of these various entities, and their linkages to MTC's mission and authority. A brief explanation of how these agencies specifically impact the development and implementation of programs described in the Action Element is provided below.

- o BCDC - BCDC's permit authority for Bay fill will affect implementation of the Regional Airport System Plan, the Seaport Plan, and the proposed construction of new bridges or transit facilities across the Bay and roadways near the Bay. Specific issues that are anticipated in the RTP that will continue to be linked to action by BCDC are airport runway expansion, fill for seaport facilities, preservation of near-term and long-term seaport development sites, and the future use of military airports near the Bay that may become "surplus" to the needs of the U.S. Department of Defense. MTC and BCDC maintain ongoing collaboration on all of these issues.
- o BAAQMD - The Air District's role is to implement and enforce the Transportation Control Measures (TCMs) included in the state Clean Air Plan. (The Yolo-Solano Air Pollution Control District fulfills this role for the eastern portion of Solano County.) MTC has developed and submitted a TCM plan to the Air District. The Air District's primary powers in this regard originate from their "indirect source" review authority, which applies to commercial and residential projects that attract vehicle trips, including employment sites, convention and sports facilities, universities, hospitals, airports, etc. Two specific rules affecting mobility in the region will be:
 - Air District proposals to establish employer-based trip reduction rules that will affect Transportation Demand Management programs (see IV.D.9).
 - Rules to modify new and existing indirect sources to enhance the convenience for people who choose not drive alone to these sites. This would involve a site design oversight role for new and existing development.

Neither rule has yet been developed, but proposals will appear in the draft Clean Air Plan.

- o Congestion Management Agencies - CMAs are charged with the responsibility to set and monitor levels of service on the

designated transportation system included in each county's Congestion Management Program (CMP). CMP plans will make explicit those parts of the transportation control measure plan for air quality that require local implementation. Further, these agencies can enforce level of service standards by withholding approval for distribution of certain state gas tax funds to local cities and counties. CMPs in each county will also require that local cities have adopted trip reduction ordinances; this will require coordination with the Air District's employer-based trip reduction rule above.

- o Cities and Counties - Cities and counties are in line to establish trip reduction rules for employers due to either the delegation of this role by the Air District or by requirement of Congestion Management Agencies. Cities and counties also have the most direct control over what is generally acknowledged as a major determinant in work and other tripmaking decisions -- that is, the location, amount, and price of parking space. While it is unclear that the ability to levy parking charges is a power available to the Air District, it is available to cities and counties. Parking charges were widely debated in preparation of the Transportation Control Measure Plan, but their implementation needs further discussion with the public.
- o Legislature - The Legislature is the source of authority for gas tax increases, bridge toll increases, vehicle registration fee increases, expanded transit coordination powers, and many transit funding programs. Implementation of the region's mobility and air quality programs will require the active participation and involvement of the Legislature in defining what further legislative initiatives are needed to provide the tools to meet state mandates in these areas.

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3. Future Issues for the RTP

3. Future Issues for the RTP

While the RTP provides many recommendations for improving regional mobility, recommendations on certain other projects, plans, and programs will require more time to develop. Some major transportation projects are not ready for inclusion in the RTP; other local plans and programs are not yet fully defined. Finally, ongoing discussions about regional governance could possibly change in dramatic fashion the way MTC and other regional agencies conduct their business. Future amendments to the RTP will incorporate the results of these studies, as appropriate.

Each of the major study/issue areas is identified below with a brief description.

a. Bay Vision 2020 Recommended Actions

Bay Vision 2020 (BV 2020) was established in response to increasing concerns among local government representatives, regional agencies, and environmental and business groups that the strain of future growth projected for the Bay Area might lead to serious traffic, economic and environmental problems. A Commission of 31 prominent citizens representing a wide array of expertise and interests was selected as the BV 2020 Commission to address an ambitious agenda:

- preservation of open space
- decentralization of jobs and housing
- "fiscalization" of land use and opportunities for local government revenue sharing
- affordable housing
- altering regional travel patterns and auto dependency through land use decisions

After a year of discussion and debate, the BV 2020 Commission concluded that any growth beyond current levels potentially threatens the character of the Bay Area unless it is well managed. Recommended future goals include:

- o more clearly defining urban areas, preserving open space, and maintaining agricultural lands through explicit land use policies such as urban limit lines;
- o cleaning up the Bay Area's air by aggressively complying with state and federal air quality requirements;
- o managing the region's water supply through better conservation, storage, reclamation and protection of watersheds;
- o providing affordable housing to all segments of the Bay Area's population, within reasonable proximity of their work places;
- o providing an efficient, energy-conserving, convenient and well integrated transportation system, with a focus on reducing drive alone trips;

- o improving the conditions of our central cities, and more thoughtfully addressing the concerns of low-income persons and communities of color;
- o ensuring the economic health of the Bay Area.

However, the BV 2020 Commission believed that current local and regional government structures were not adequately equipped to deal with emerging problems and achieve the Bay Area envisioned in the above goals. A key recommendation emerging from the BV 2020 Commission's evaluation is that the existing regional agencies of MTC, ABAG, and BAAQMD should be merged to form a single, multi-purpose regional agency for the Bay Area. During its 1992 session, the California State Legislature will be considering several bills addressing "regional growth management" and related issues, similar to those raised during the BV 2020 effort. MTC will be following the progress of these legislative proposals.

3. Future Issues for the RTP (cont.)

b. Major Transportation Projects

The following major transportation projects are undergoing a continuing assessment and have not yet been incorporated into the RTP:

- o **New Bay Crossing** - In 1989, the Legislature directed MTC to conduct an initial evaluation of ways to increase capacity for transbay travel (State Senate Concurrent Resolution 20, 1989). MTC's study of future bay crossings focused on five major options, including operational improvements to existing services, new ferry routes, new bridges, additional BART links and tunnel crossings for conventional rail (like CalTrain). Several key issues were identified for continuing assessment:
 - the impact of changing development patterns in the region on transbay travel;
 - the financial capacity of the region to construct a new Bay crossing;
 - the cost-effectiveness of such a crossing relative to other regional transportation investment;
 - the environmental consequences of a new crossing on the Bay and its shoreline; and
 - the traffic impacts on freeways serving a new bridge.

This study helps to frame a major challenge for MTC as it integrates study findings into the region's overall development strategy, which will be addressed in the next update of the Regional Transportation Plan.

- o **Mid-State Toll Road Study** - Assembly Bill 680 authorized Caltrans to enter into agreements with the private sector to develop four toll road demonstration projects in California. Toll roads would provide a new means to finance transportation facilities outside of identified public funding sources. After evaluating a number of proposals, Caltrans selected a demonstration project for Northern California called the Mid-State Toll Road. This facility would traverse three counties -- Alameda, Contra Costa and Solano -- and link the cities of Sunol, Livermore, Brentwood, Antioch and Dixon with a continuous bypass facility crossing the Sacramento and San Joaquin rivers. Commercial, recreational, and other traffic desiring to bypass congestion in the central Bay Area could opt to pay a toll in exchange for speedier travel. The concept is in the early planning stage. Like the proposed new Bay Crossing study above, a number of important issues are associated with such a facility, including financial feasibility and environmental impacts.

MTC will be offering its assistance to this study in the preparation of travel demand forecasts, whereas other analyses will be conducted by the private sector development team.

- o **Rail Planning** - A number of major rail corridor studies affecting the Bay Area were completed in 1990: the ACR-132 Hannigan Rail Corridor Upgrade Study (Auburn to San Jose); the AB 971 High Speed Rail Study (Los Angeles/Bay Area/Sacramento); and the Dumbarton Commuter Rail Feasibility

Study. Additional studies are just beginning: I-580 Altamont Corridor Rail Study and the San Francisco-Eureka Corridor Rail Study. Still other efforts are being proposed: the Alameda-Contra Costa Consolidated Rail Corridor Plan and commuter rail service in the I-80 corridor between Crockett and Oakland. Rail service in Marin and Sonoma counties has been studied extensively as part of the U.S. 101 Corridor Study.

Legislation is already in place (SB 1307, California High Speed Ground Transportation System Plan) and additional legislation (AB 1210, East Bay Rail Joint Powers Agency) has been proposed to begin the coordination and integration of these separate rail planning efforts. In accordance with MTC's principles for expanding the RTP, MTC will seek to ensure the appropriate integration of intercity, commuter, and other rail services into the Metropolitan Transportation System, and MTC will assist in the further development of viable rail options.

- o **Route 61** - Proposals have been made to provide a continuous Eastshore expressway or highway from the City of Alameda to the Dumbarton Bridge or Route 237.
- o **Long Range BART Extension Studies** - Proposals for extending BART include:
 - Extensions into Solano County
 - Peninsula BART extension beyond San Francisco Airport to San Jose
 - Rail transit in the Golden Gate Bridge corridor via the Bridge or a BART tube underneath the Bay.
 - San Francisco-Oakland Airport BART tube underneath the Bay (studied as part of SCR 20 above)
- o **Muni Metro Extensions** - San Francisco's sales tax measure provides long-term funding for transit projects not yet fully developed. Proposed projects could be a variety of transit improvements (light rail, bus, etc.) in the Geary, North Beach or Bayshore corridors. The city will be developing recommendations for these corridors in the near future.
- o **Transit in San Ramon Valley** - Abandoned Southern Pacific Railroad right-of-way has been acquired by Contra Costa County and is currently being used as a pedestrian/bicycle trail. Proposals have been made in the past to use this right-of-way for some form of mass transit.
- o **Santa Clara County Light Rail** - Extensions of the Santa Clara County light rail system through Milpitas to East San Jose in the east and Mountain View/Sunnyvale in the west are currently in the planning stages, as is an extension in the Vasona Corridor. Further extensions are being considered by the Santa Clara County Transportation Agency (SCCTA) on Route 85, on Capitol Expressway, and to Edenvale.

- o **East Bay Light Rail** - AC Transit has proposed construction of a light rail facility on San Pablo Avenue, a heavy transit use corridor between El Cerrito and downtown Oakland; further extension of the light rail line south along East 14th Street to Hayward BART has also been proposed.
- o **Bay Area Regionwide Ferry Plan** - MTC and the city of Vallejo are sponsoring a study to develop a regional plan for future ferry services and capital needs. A number of issues are being addressed in the study, including:
 - an evaluation of the effectiveness of the existing ferry services operating on the Bay, and the need for new ferry services on the Bay;
 - integration of ferry service with other Bay Area transportation services, particularly the issue of timely, coordinated "land-side" connections;
 - pursuit of long-term, stable sources of operating support for ferry services;
 - development of a long-term, fundable capital program, including high speed ferry vessels and terminals;
 - expansion of the ferry ridership market;
 - institutional arrangements for providing a regional ferry service, particularly partnerships involving public and private ferry providers.

3. Future Issues for the RTP (cont.)

c. Planning Coordination Outside of the Bay Area

Increasingly, MTC's interests in land use and transportation are mingled with those of the counties adjoining the MTC region. The concept of the Bay Area "region" is presently being redefined by the construction of housing for Bay Area workers outside the nine county boundaries. From a transportation standpoint this trend implies a greater need to plan for increased travel demands at all the gateways to the Bay Area. These gateway corridors need to be evaluated to determine specific traffic management strategies relating to one or more types of transportation improvements in intercity rail, express bus, park-and-ride and carpool facilities, etc. It is MTC's intent to join in cooperative planning exercises with our neighbors to develop proposals that will benefit our mutual interests.

3. Future Issues for the RTP (cont.)

d. Major Planning Efforts, Including CMPs

- o **Countywide Transportation Plans** - Several counties in the Bay Area are conducting comprehensive transportation studies that will identify future improvements for consideration in the RTP. Countywide transportation plans are currently being prepared in Santa Clara County (T 2010), Alameda County (County Transportation Plan), and Contra Costa County (Measure C Growth Management Plan). These plans will provide each county's perspective on future travel issues and opportunities and will support the RTP development. AB 3705 (statutes of 1988) provides the scope and context of such countywide plans. MTC has adopted guidelines for preparation of these plans in recognition of the intent of the legislation which is to have these plans serve as the primary basis of the RTP; "the Commission shall add proposals and policies of regional significance to the regional transportation plan".
- o **Congestion Management Program (CMP)** - CMPs were first required under AB 471 (statutes of 1989) and refined under AB 1791 (statutes of 1990). As further described in Appendix A-IV, MTC must find the CMP consistent with the RTP and has adopted guidance for all cities and counties to facilitate this finding. MTC's consistency guidance focuses on:
 - consistency with the transportation system defined in the RTP
 - consistency with transportation related air quality requirements promulgated through the federal and state clean air acts
 - consistency in the regional travel forecast assumptions and methodologies
 - consistency between CMPs in adjoining counties.

Since the CMPs are being prepared concurrently with the 1991 RTP, future issues related to RTP consistency will not be fully developed at RTP adoption time. This means that MTC will need to anticipate and prepare for analyzing CMP recommendations in subsequent RTP revisions.

- o **Caltrans Urban Transportation Strategy** - The State Department of Transportation is now engaged in an ambitious program to shift its focus from highway planning and construction to a more multi-modal approach when addressing transportation problems. The new strategy aims to elevate the consideration of transit, transportation demand management strategies, and local arterial improvements as options to alleviate congestion at a corridor level. Increased emphasis will be placed on the evaluation of land use and air quality impacts.

In many respects, the Urban Transportation Strategy embodies many of the same principles as the Metropolitan Transportation System at the heart of this RTP. As Caltrans Districts 4 and 10 (which cover the Bay Area region) develop and refine their responses to the Department's Urban Transportation Strategy, MTC will work

closely with them to ensure that the strategy aligns with our region's MTS objectives. Key issues will involve:

- development of common transportation planning principles; and
- establishment of consistent, supporting analytical techniques, including a common transportation data base and modeling methodology.

CHAPTER V:
FINANCIAL ELEMENT

CHAPTER V. FINANCIAL ELEMENT

A. OVERVIEW

The Financial Element of the RTP provides estimates of costs and revenue projections associated with the various transportation improvements described. This section also outlines a set of principles and strategies for a financial program to maintain both the existing and programmed improvements as well as projects listed in the transportation improvement options.

Included in the Financial Element are:

- o Capital and operating costs required to operate the existing system and to implement programmed improvements and other transportation improvement options of the RTP over the 20-year period from 1991 to 2010;
- o Twenty-year projections of federal, state, regional, and local revenues anticipated to be available to finance programmed improvements;
- o Proposed financial principles and policy recommendations to govern the allocation of funds and development of new revenue sources; and
- o Financial strategies for helping fund transportation improvement options.

B. COST AND REVENUE PROJECTIONS

Methodology

All costs are in 1990 dollars.

Highway Program Costs

Cost estimates for the Highway Program were developed based on Caltrans' cost data. For projects not on Caltrans' list, AB 84 Project Studies Reports and County Sales Tax Expenditure Plans were used. Engineering costs are not included in highway cost estimates.

Transit Program Costs

Capital Cost represents engineering, construction and right-of-way cost of new rail facilities, purchase cost of new rolling stock associated with capacity enhancements, and replacement costs of rolling stock associated with the existing system.

Operating Cost estimates for capacity expansion were based on projected increases in service level, and the existing cost structure of regional transit operators.

For the existing regional transit system, the annual operating cost for fiscal year 1989-90 was assumed constant over the 20-year period.

Revenue Forecast Assumptions

All revenue projections are in 1990 dollars.

Highway Program Revenues

- o **State Highway Account Revenues:** Revenues from federal and state gasoline taxes and fees make up the bulk of these revenues. The 20-year revenue forecast is based on the 1990 State Transportation Improvement Program (STIP) Fund ten-year estimate, revised to include revenues from the federal gas tax increase that took effect in January 1991, and assumptions regarding the amount of these new revenues that will be available for highway expenditures. Gasoline consumption is assumed to grow at an annual average rate of .75 percent over the 20-year period.

It is assumed that for the RTP planning period 90 percent of new federal revenues will flow into the State Highway Account, and that except for the first two years, 80 percent of all new federal gas tax revenues will be available for highway funding, and 20 percent available to fund transit improvements. This funding rule will hold for the remainder of the reauthorization period.

The revenue projections also assume that an additional 5-cent federal gas tax will be enacted at the beginning of each five-year reauthorization period starting in January 1997, and funding availability will follow the same rules as obtained in the first five-year period.

State Highway Account revenues are subject to a "North/South split" with the Northern California counties receiving 40 percent of available revenues. The MTC region is assumed to receive 50 percent of all revenues apportioned to the North.

- o **County Sales Tax Revenues:** Projected county sales tax revenues for highway improvements are included in the RTP highway program until their sunset date.

Transit Program Revenues

Capital and operating revenues were projected for each revenue source based on the following assumptions:

- o **Fare Revenues:** Fare revenues were projected for a constant fare revenue/operating cost ratio for each operator over the forecast period.
- o **UMTA Funds:** Federal funding for the regional mass transit program is assumed to be:
 - Section 3 funds: \$40 million for Rail Modernization and \$100 million for New Rail Starts.
 - Section 9 funds: based on historical trends for capital and operating revenues, are assumed at \$53.7 million and \$26.7 million annually.

- o Transportation Planning and Development (TP&D) Account: TP&D Account revenues are allocated to fund public transit via the State Transit Assistance and Transit Capital Improvements Program. Revenues are projected based on forecasted state sales tax revenues on motor vehicle fuel.
- o Bridge Toll Revenues: AB 664 and Regional Measure 1 funds are allocations of bridge toll revenues to MTC to fund regional transit capital improvements in the vicinity of the toll bridges, and MTC's New Rail Starts and Extensions program. Bridge Toll revenue projections are based on toll bridge traffic growth forecasts.
- o TDA and Half-cent Sales Tax Revenue: Transportation Development Act and local half-cent sales tax revenues were estimated for each county based on taxable sales forecasts, derived from estimated growth in population and personal income.
- o AB 1107 Funds: AB 1107 revenues are based on 1/2 percent sales tax projections for the counties of Alameda, San Francisco and Contra Costa.
- o General Fund Revenues (San Francisco) to fund the Municipal Railway: These revenues are projected at the historical growth rate.
- o State Rail Bonds: State projected rail bond funds are projected as authorized by Propositions 108 and 116. The amount allocated to the region is based on allocation policies of the California Transportation Commission (CTC).
- o Property Tax: Property tax revenues are projected over the 20-year period based on analysis of recent trends.

Cost Estimates

Tables V-1 and V-2 indicate 20-year cost estimates and total revenue estimates. In summary:

1. Costs to maintain and operate the existing transit system are \$19.4 billion. (Maintenance costs for the existing highway system are not included.)
2. Costs to construct and operate Programmed Commitments over the next 20 years are \$13.4 billion. Transit costs represent \$7.9 billion (\$3.1 billion in construction costs, \$4.0 billion in operating costs, and \$.7 billion for new rolling stock). Highway costs account for the remainder.
3. Other potential transportation improvement options listed in the RTP are estimated to cost an additional \$21.1 billion.
4. Total capital and operating costs for the existing system, currently programmed commitments and other transportation improvement options is \$53.9 billion.
5. Twenty-year projections of revenues--based on the fund sources and assumptions above--indicate that \$35.9 billion may be available to the region to finance the \$53.9-billion cost. This includes \$25.9 billion in

revenues traditionally used for transit financing and \$10 billion in highway revenues. However, most revenue sources are project specific (i.e., funds are granted for transit maintenance or highway expansion or rail extension, etc.). Therefore it is not possible to determine whether each transportation improvement project listed in the RTP would have sufficient funds to be implemented.

6. In total, the region will need an additional \$18 billion (\$35.9 billion in revenues minus the \$53.9 billion in costs) to finance all transportation improvement options identified in the RTP.

TABLE V-1: REGIONAL TRANSPORTATION PLAN COST ESTIMATES
(in thousands of 1990 dollars)

Highway Capital Costs

County	Existing System	Action Element	Improvement Options (2010)	Total Capacity
Alameda	0	2,096,289	4,069,034	6,165,323
Contra Costa	0	2,109,536	1,760,334	3,869,870
Marin	0	116,700	201,543	318,243
Napa	0	35,281	25,798	61,079
San Francisco	0	247,079	79,739	326,818
San Mateo	0	381,522	513,704	895,226
Santa Clara	0	474,889	1,071,067	1,545,956
Solano	0	56,040	932,560	988,600
Sonoma	0	54,746	427,786	482,532
Regional Highway Total	0	5,572,082	9,081,565	14,653,647

Transit Capital Costs (Construction)

County	Existing System	Action Element	Improvement Options (2010)	Total Capacity
Alameda	0	810,908	1,441,322	2,252,230
Contra Costa	0	426,469	1,361,992	1,788,462
Marin	0	0	206,100	206,100
Napa	0	0	0	0
San Francisco	0	875,800	1,330,000	2,205,800
San Mateo	0	520,400	30,200	550,600
Santa Clara	0	475,454	2,085,355	2,560,809
Solano	0	1,385	82,677	84,062
Sonoma	0	0	86,300	86,300
Regional Transit Total	0	3,110,415	6,623,946	9,734,362

Transit Costs (Non-Construction)

Item	Existing System	Action Element	Improvement Options (2010)	Total Capacity
Operating Cost	16,348,186	4,046,099	4,553,452	24,947,737
Capital Cost	3,056,000	705,750	841,708	4,603,458
Regional Total	19,404,186	4,751,849	5,395,160	29,551,196
Total Transit	19,404,186	7,862,265	12,019,106	39,285,557
Total Highway & Transit	19,404,186	13,434,347	21,100,672	53,939,205

TABLE V-2: REGIONAL TRANSPORTATION PLAN REVENUE FORECASTS
(in thousands of 1990 dollars)

REVENUE SOURCES	20-YEAR TOTAL
Highway Program Funds	
State Highway Account Revenues	6,411,225
County Sales Tax Revenues	2,410,624
Bridge Toll Revenues	1,234,692
Total Highway Funds	10,056,541
Transit Program Funds	
Total Local Funding Sources:	20,920,416
Farebox Revenues	6,801,556
Bridge Toll Revenues	328,447
TDA Revenues	2,900,747
County Sales Tax Revenues	4,316,202
Property Tax/Muni General Fund	3,190,705
AB1107 Revenues	3,163,532
Golden Gate Transit District	219,226
Total State Funding Sources:	2,028,945
State Rail Bonds	814,725
Article XIX	72,623
TP&D/TCI	537,979
State Transit Assistance	603,618
Total Federal Funding Sources:	2,964,263
Umta Section 9 Formula	1,081,337
Umta Section 3	1,882,926
Total Transit Funds	25,913,624
TOTAL HIGHWAY AND TRANSIT FUNDS	35,970,165

C. FINANCIAL PRINCIPLES

The following outlines a set of principles for a transportation financing program. These principles are to help guide the region in making more effective use of existing revenue sources as well as to help identify new revenue sources.

Maintenance of Existing Systems

- o Sufficient funds should be set aside for federal funding to maintain the Interstate System.
- o Sufficient funds must be available to maintain and operate the region's public transit systems.
- o Sufficient funds must be dedicated to maintain local streets and roads.

Capacity Expansion

- o Transportation system capacity should be enhanced over time to respond to the needs of a growing economy and population. Funds must be available to meet these needs.
- o Stable sources of funding must be secured.
- o The decline in state and federal commitments to transportation funding must be reversed and the historic partnership restored.
- o State and federal gas tax increases are needed to sustain and improve the nation's surface transportation systems. Transportation needs must be considered first whenever gasoline taxes are proposed.
- o All transportation funds should be made permanent and their user fees dedicated to those trust funds only. Transportation trust funds at both the state and federal levels must be spent on transportation only.
- o State and federal funding must be predictable and equitably distributed.
- o Bridge tolls should be maintained as a revenue source for both bridge maintenance and improvement, and transit improvements in bridge corridors.

Formula Funding Distribution

- o State and federal funding should be predictable and allocated directly to metropolitan and rural transportation areas using equitable formulas.
- o Meaningful budget choices and a firm planning base are fostered by carefully defined spending formulas. Only when the region can plan based upon a defined budget will meaningful choices be possible among modes or facilities in a given corridor.

Flexible Funding

- o State and federal governments should encourage cost-effective investments by blending major transit and highway capital funding available for system

expansion by creating one account for the urban/suburban systems and another account for rural systems.

- o System options should include freeways, expressways, transit facilities, arterials, and operational improvements.
- o Federal and state matching requirements should be uniform for investments in new or expanded highway and transit facilities.

Pricing Strategies and User Fees

- o User fees should be considered when financing major improvements to the transportation infrastructure. User fees should be targeted to those who benefit from the improvement.
- o Revenues derived from pricing strategies should be dedicated to building and operating mobility improvements. This revenue dedication should offset any equity imbalances caused by pricing strategies and user fees.

D. STRATEGIES FOR FINANCING 2010 TRANSPORTATION IMPROVEMENTS

As indicated in the cost and revenue section, the region is projected to be able to finance the existing and committed program, assuming revenues continue to flow consistent with our assumptions and past trends. However, improvements above and beyond the committed program would add up to \$21.1 billion in additional costs, requiring another \$18 billion in additional revenues.

Using the principles listed above, MTC is recommending the following financing strategies for maintaining existing revenue sources, and for development of new revenue sources to help finance the transportation improvement options.

- o Maintain existing funding programs at inflation-adjusted levels of funding.
 - index all motor vehicle fuel-based revenues to inflation
 - index federal and state gas taxes
 - index bridge tolls to inflation
- o Eliminate exemptions from state and local transportation taxes.
 - extend aviation fuel charges to commercial carriers
 - eliminate exemptions to county transaction and use taxes
- o Expand the user fee concept to cover funding of new transportation infrastructure improvements.
 - implement passenger facility charges to finance airport transportation access improvements
 - implement parking charges at transit parking facilities as an integral part of a transit fare policy
- o Implement revenue measures identified in the MTC Transportation Control Measure Plan.

- Increase Bridge Tolls by \$1
- Increase Auto Registration Fees by \$4
- Implement Regional Gas Tax

Conclusion: The financing strategies above, if implemented, could generate sufficient new transportation revenue to significantly reduce the \$18 billion regional funding shortfall.

APPENDICES

A-I. GLOSSARY

A-II. COMMISSION STRUCTURE

A-III. PUBLIC PARTICIPATION; MTC ADVISORY GROUPS

A-IV. PLAN AND PROGRAM REVIEW PROCEDURES

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APPENDIX A-I. GLOSSARY

Association of Bay Area Governments (ABAG): The regional agency that is responsible for regional planning other than for transportation. ABAG publishes forecasts of projected growth for the region that are used as inputs to MTC's modeling process.

Bay Area Air Quality Management District (BAAQMD): The regional agency created by the state legislature for the Bay Area air basin. In conjunction with MTC and ABAG, BAAQMD develops the region's air quality plan, and has an active role in approving the region's TCM plan.

California Transportation Commission (CTC): The body that develops the State Transportation Improvement Program (STIP), which qualifies projects for state funding. The CTC also approves RTPs from regional agencies around the state, and promulgates guidelines for RTP development.

Caltrans: The California State Department of Transportation. The owner/operator of the state highway system, responsible for its safe operation and maintenance. Caltrans is the implementing agency for most state highway projects, regardless of program, and for the Intercity Rail program.

Categorical Funding: Funding that must be spent on particular types of projects or facilities, such as Federal Aid Interstate (FAI), Federal Aid Urban (FAU), Federal Aid Primary (FAP), and Federal Aid Secondary (FAS) funding, each of which can only be spent on an appropriately-designated highway or roadway. Contrasted to Flexible Funding (see below).

Congestion Management Program (CMP): A state-mandated program to reduce traffic congestion at the county level. Required of all urbanized counties in California (including all 9 Bay Area counties).

Demand-Responsive Transit: A transit system characterized by flexible routing and scheduling of relatively small vehicles to provide door-to-door, curb-to-curb, or point-to-point transportation at the user's demand to any location within the transit provider's service area.

"Dial-a-Ride" Transit: A demand-responsive system in which curb-to-curb transportation is provided to patrons who request service by telephone, either on an ad hoc or subscription basis.

Express Bus: Bus service with a limited number of stops, either from a collector area directly to a specific destination or in a particular corridor with stops en route at major transfer points or activity centers. Express bus service usually uses freeways or busways where they are available.

Federal Highway Administration (FHWA): The federal agency responsible for the approval of transportation projects that affect the federal highway system. It assists states in constructing highways and roads, and provides financial aid at the local level. It is a component of the U.S. Department of Transportation (DOT), and is the sister agency of UMTA.

Fixed-Route Transit: Conventional transit service in which transit vehicles operate exclusively along a pre-designated route at fixed times.

Flexible Funding: A policy of utilizing transportation funds across a wide range of potential projects, including highways, local streets and roads, rail transit, bus transit, and possibly operational improvements. Contrasted to Categorical Funding (see above).

Headway: The length of time between two public transportation vehicles traveling in the same direction on the same route. For example, buses on a route that arrive every 15 minutes are said to have a 15-minute headway.

Heavy Rail (or Rapid Rail): A transit system that generally serves one urban area (as opposed to intercity rail), using high-speed, electrically powered passenger rail cars operating in trains in exclusive rights-of-way, without grade crossings, and with high station platforms.

High-Occupancy Vehicle (HOV)(Lanes): A vehicle carrying more than a preset number of occupants. HOV lanes are those lanes reserved exclusively for high-occupancy vehicles. HOVs are generally defined as those carrying 2 or more persons, or those carrying 3 or more persons.

Intercity Rail: Rail service linking two or more urban or metropolitan areas. Such service is usually characterized by relatively large distances between stations.

Lane Miles: A measure of capacity of a particular segment of freeway or expressway; the distance of the segment in miles times the number of lanes in that segment.

Level-of-Service (LOS): A measure of congestion that compares actual or projected traffic volumes with the maximum capacity of the intersection or road in question.

Light Rail: A metropolitan electric railway system characterized by its ability to operate single cars or short trains along exclusive rights-of-way at ground level, on aerial structures, in subways, or occasionally in streets, and to board and discharge passengers at track or car floor level.

Mass Transit (or Public Transit): General term for the collective transportation services available to the public which cannot be reserved for the private and exclusive use of individual passengers.

Metropolitan Transportation System: A regional, multi-modal transportation system that emphasizes a balanced strategy of highway, transit, and arterial capital investments and operational improvements to manage existing and projected congestion.

Mode Share (or Mode Split): The proportion of total person trips that uses each of various specified modes of transportation.

"Open-Door" Transit Service: The policy of permitting any transit providers operating in a city or transit corridor to pick up passengers at scheduled stops, rather than only the primary transit provider.

Paratransit: A form of transportation service that is more flexible and personalized than conventional fixed-route, fixed-schedule service, but not including such exclusory services as charter bus trips. The vehicles are usually low- or medium-capacity highway vehicles, and the service offered is adjustable in various degrees to individual users' desires. It may be public (open to all) or semi-public (elderly or handicapped-only, etc.).

Park-and-Ride Lot: An auto parking facility for transit or carpool users, generally located at transit stops or terminals or along highways, expressways, or major arterials at the edge of an urban area.

Pavement Management System (PMS): A computer-assisted method of organizing and analyzing information about pavement conditions to develop the most cost-effective maintenance treatments and strategies. MTC has developed a software program tailored to the conditions and needs of jurisdictions in the San Francisco Bay Area, and provides technical assistance to cities and counties that seek to implement a PMS.

Peak Period (or "Rush Hour"): The period during which the maximum amount of travel occurs; it may be specified as the morning (a.m.) or afternoon or evening (p.m.) peak.

Proposed State Transportation Improvement Program (PSTIP): A seven- year program of projects developed by Caltrans for CTC approval. It may include schedule and/or cost changes to the existing STIP, plus new projects proposed by Caltrans for the interregional road system, intercity rail system, retrofit soundwalls, toll bridges and aeronautics program.

Ramp Metering: The process of facilitating traffic flow on freeways by regulating the amount of traffic entering the freeway through the use of control devices on entrance ramps.

Regional Transportation Improvement Program (RTIP): A list of proposed transportation projects submitted to the CTC by the regional transportation planning agency (for the Bay Area, MTC), as a request for state funding. The individual projects are first proposed by local jurisdictions, then evaluated and prioritized by the regional agency for submission to the CTC. The RTIP has a seven year planning horizon, and is updated every two years.

Revenue Vehicle Hours: Total of the scheduled transit service operating hours for a transit vehicle, route, or system.

Revenue Vehicle Miles: Total of the scheduled transit service miles for a transit vehicle, route, or system.

Ridesharing: A form of transportation, other than mass transit, in which more than one person shares in the use of the vehicle, such as a bus, van, or automobile, to make a trip.

Service Authority for Freeways and Expressways (SAFE): A system of emergency callboxes along Bay Area freeways and expressways, installed and operated by MTC.

"Smart Streets": A generic term for street systems that can provide information on traffic conditions to motorists. Future "smart streets" may provide alternate route information and semi- or fully-automated vehicle lanes. See Traffic Operations System, below.

State Implementation Plan (SIP): State plan required by the Federal Clean Air Act of 1990 to attain and maintain national ambient air quality standards. It is adopted by local air quality districts and the State Air Resources Board.

State Transportation Improvement Program (STIP): The list of transportation projects, proposed in RTIPs and the PSTIP, which are approved for funding by the CTC.

Subarea: An informal subdivision of the 9-county Bay Area, providing a level of detail between individual counties and the entire region.

Telecommuting: Term used to describe work occurring at an employee's home or nearby work station, linked to a larger work center by computer and modem, fax machine, etc.

Timed Transfers: A transit system designed so that transit vehicles on several lines are scheduled to arrive at a transfer point simultaneously and depart a few minutes later, thus allowing transfers among the lines with virtually no waiting. Timed transfers are generally arranged in areas or during times of the day where service is infrequent (i.e., headways are greater than 10 minutes).

Traffic Operations System (TOS): An informational system that uses electronic roadway surveillance, communication of traffic conditions to motorists, and ramp metering to reduce congestion on the freeway system.

Traffic Signal Management Program (TSMP): An MTC-sponsored program to coordinate traffic signal timing along major arterials that pass through several jurisdictions.

Transportation Control Measures (TCM): A measure intended to reduce pollutant emissions from motor vehicles. Examples of TCMs include programs to encourage ridesharing or public transit usage, city or county trip reduction ordinances, and the use of cleaner burning fuels in motor vehicles. MTC has adopted specific TCMs, in compliance with the Federal and State Clean Air Acts, that can be found in MTC Resolution No. 2131 and the Transportation Control Measure Plan for the State Clean Air Plan prepared by MTC in June of 1990.

Transportation Demand Management (TDM): Congestion-reduction techniques aimed at reducing demand for transportation; examples include programs to encourage ridesharing or public transit usage, and flexible work schedules or staggered work hours enabling employees to commute outside of peak periods.

Transportation Systems Management (TSM): That part of the urban transportation planning process undertaken to improve the efficiency of the existing transportation system. The intent is to make better use of the existing transportation system by using short-term, low-capital transportation improvements that generally cost less and can be implemented more quickly than major system expansions (i.e., building additional freeway lanes or new roads).

Transportation Improvement Program (TIP): A federally required document produced by the regional transportation planning agency (MTC in the Bay Area) that states the investment priorities for transit and transit-related improvements, mass transit guideways, general aviation and highways. The TIP is MTC's principle means of implementing long-term planning objectives through specific projects.

Urban Mass Transit Administration (UMTA): The federal department of mass transportation, under the larger US DOT (Department of Transportation) and the sister agency to FHWA (see above). UMTA provides a variety of capital and operating funds to both urban and rural transit operators.

APPENDIX A-II. COMMISSION STRUCTURE

Introduction

This Appendix describes the structure and basic responsibilities of the Metropolitan Transportation Commission. The description of the Commission and its procedures is included for information only, and may change as a result of new laws, regulations or actions by the Commission.

Commission Structure and Responsibilities

MTC was created by the state Legislature in 1970 to provide transportation planning for the nine-county San Francisco Bay Area. One of the Commission's first tasks was the preparation of a comprehensive Regional Transportation Plan. The Commission was also directed to screen requests from local agencies for state and federal grants for transportation projects to determine their compatibility with the plan.

Over the years, state and federal laws and regulations have expanded MTC's role considerably. The Commission has been assigned responsibility for administering several important public transit funding sources in the Bay Area. MTC monitors the operators' budgets, conducts performance audits and adopts a yearly productivity/transit coordination improvement program. Equally important, the Commission sets capital investment priorities for both transit and highways in the Bay Area.

In recent years, MTC's role has expanded beyond planning, programming and monitoring to include technical assistance projects. The Commission has provided staff assistance to the Regional Transit Connection Clearinghouse, which markets transit tickets and passes through Bay Area employers. Examples of other recent endeavors include a pioneering Pavement Management System developed by MTC to help Bay Area cities and counties better maintain their local streets and roads; a study of arterial routes that run parallel to freeways showing how simple, relatively low-cost strategies such as traffic signal coordination and consolidated bus stops could ease traffic congestion across city and county lines; completion of a Regional Paratransit Plan to meet the transportation needs of the region's growing disabled and elderly population; and initiation of the Service Authority for Freeways and Expressways (SAFE)--a system of motorist-aid call boxes in six Bay Area counties.

Increasingly, MTC has had to address the interrelated problems of growth, traffic congestion and smog. Guidelines that the Commission has adopted are helping counties to prepare state-required Congestion Management Programs that evaluate the impacts of new land development on the transportation network. MTC has also formulated transportation control measures--strategies to reduce vehicle trips and encourage ridesharing and mass transit use--in response to state and federal air quality laws.

MTC is given policy direction by a 19-member panel. Fourteen members are appointed directly by local elected officials. The Bay Area's five most populous counties--Alameda, Contra Costa, San Francisco, San Mateo and Santa Clara--are each represented by two commissioners. The counties of Marin,

Napa, Solano and Sonoma have one commissioner each. Two members represent regional agencies--the Association of Bay Area Governments and the Bay Conservation and Development Commission. In addition, three non-voting members have been appointed to represent the state Business, Transportation and Housing Agency, the U.S. Department of Transportation and the U.S. Department of Housing and Urban Affairs.

Five standing committees, made up of seven or eight commissioners each, review issues before they are presented to the full Commission. They are:

- o Executive Committee: considers matters of urgency brought before it by the Chair between Commission meetings and other matters assigned to it by the Commission or the Chair.
- o Administration and Oversight Committee: develops agency personnel and financial policy, oversees the agency's budget, contracts and management.
- o Work Program and Plan Revision Committee: develops the region's annual transportation planning work program, reviews planning policies and issues, proposes revisions to the RTP, and develops priorities for the implementation of projects and programs for the improvement of the regional transportation system.
- o Grant Review and Allocations Committee: recommends the allocation of various transportation assistance funds to eligible claimants, reviews proposed improvement projects, and recommends the approval of applications for state and federal funds for project implementation.
- o Legislation and Public Affairs Committee: recommends Commission legislative policy, represents the Commission in the legislative process and oversees the Commission's public information and citizen participation program.

Introduction

This appendix outlines the process by which the public can provide input to MTC's activities. All meetings of the Commission and its committees are open to the public, during which citizens can present their views to MTC. Special public hearings or meetings on specific issues are held as needed. MTC also has many advisory committees and panels with varied memberships, as appropriate. Additionally, MTC has an active public information program that facilitates informed comment by interested citizens on all MTC activities. Following is further information on MTC's public comment process, public information program and advisory committees and panels.

Public Comment

Citizens are welcome to present their views to MTC at all Commission and committee meetings as well as meetings of its advisory panels and committees. Agendas are posted 72 business hours in advance of the meeting time in the MTC/ABAG Library, located in the Joseph P. Bort MetroCenter (the building that houses the MTC offices) at 101 Eighth Street in Oakland. Agendas and meeting notices are available from the MTC Public Information Office. Interested citizens can request to be added to the mailing list for a particular meeting, or to receive the agency's newsletter or annual report.

All Commission and committee agendas include an opportunity for the public to bring issues and concerns to the attention of the Commission. Anyone wishing to speak before the Commission or its committees should fill out a request-to-comment card, available from staff at the meeting. The public is encouraged to comment on issues when they are before an MTC committee, although comments may also be made on an agenda item when it is before the full Commission. Other non-agenda items may be brought up during the Other Business/Public Comment period of the agenda. Citizens are encouraged to provide a written copy of presentations to the Commission or its committees, particularly if the statement is too long to be presented in its entirety. Citizens unable to attend MTC meetings can submit their concerns and ideas in writing to the MTC Public Information Office.

Written materials that accompany agenda items are made available to the public at the meeting. The materials are also available from the MTC/ABAG Library or from the MTC Public Information Office.

Public Hearings

Public hearings on specific issues may be held independently or at the same time as a Commission or committee meeting. Notices of these public hearings are placed in the legal section of at least nine major newspapers in the MTC region, three of which are newspapers circulated in minority communities of the Bay Area.

Documents containing the proposals to be considered at MTC public hearings are made available upon request. In addition, these documents are placed on file in the MTC/ABAG Library and mailed to major libraries throughout the MTC

region prior to the public hearings. The MTC Public Information Office (Tel. 415/464-7787) can provide citizens with the name and address of the library that received the public hearing documents located nearest their home.

MTC's Public Information Program

The MTC Public Information Office is available to answer questions from the public about MTC. Public Information staff can provide interested citizens with agendas, meeting notices and materials that accompany agenda items for meetings of the Commission and its committees and advisory panels. Other reports or special publications also are available from the Public Information Office or the MTC/ABAG Library.

The Public Information Office publishes MTC's monthly newsletter, Transactions. The newsletter offers general transportation news as well as news about MTC's activities. Some 7,500 copies are circulated free of charge to public officials, legislators, transit staff, national transportation groups, environmental groups, business groups, press, libraries, and the general public. Interested citizens can request to be added to the Transactions mailing list.

MTC Advisory Groups

- o MTC/Association of Bay Area Governments (ABAG) Regional Airport Planning Committee (RAPC): a joint committee of MTC and ABAG that studies and makes recommendations relating to airport development policies and proposed legislation. It also monitors and updates the Airport Element of the Regional Transportation Plan.
- o MTC/Bay Conservation and Development Commission (BCDC) Seaport Planning Advisory Committee: responsible for developing the legislatively mandated Seaport Element to the Regional Transportation Plan and recommendations for revision of the BCDC Bay Plan policies on ports. The Committee completed the San Francisco Bay Area Seaport Plan in 1982, and approved an update in 1989.
- o Transit Finance Policy ("842") Committee: established pursuant to Assembly Bill 842 to develop the financial plans of AC Transit, San Francisco Municipal Railway and the Bay Area Rapid Transit District (BART) in cooperation with these three operators and continues to review and update those financial plans.
- o Senior Citizen and Disabled Advisors: appointed by each commissioner, one senior and one disabled person, to advise the commissioner on transportation issues, policy recommendations, proposed legislation and funding issues as they relate to accessible mass transit and paratransit.
- o Paratransit Coordinating Councils (PCC): created in and by each county; composed of private and non-profit agencies, paratransit and mass transit operators, and paratransit users, with the participation of MTC and other concerned agencies. PCCs are charged with evaluating the needs of disabled, elderly, minority, and low income individuals in urban and non-urban areas of the county, then proposing ways to increase coordination and availability of special transportation services by

promoting the efficient use of limited paratransit resources. PCCs review all paratransit service funding requests. PCC comments are included in the formal staff evaluation considered by MTC.

- o Minority Citizens Advisory Committee (MCAC): created in 1975 to ensure that the views and needs of minority communities are adequately reflected in MTC policies. The Commission appoints members from the nine Bay Area counties to represent the region's major ethnic minority groups: Black, Asian, Hispanic and Native American. MCAC reviews MTC's work program and projects as well as the transit operators' short-range transit plans. This Committee also assists the Commission in the formulation and review of the MTC Affirmative Action Plan goals and timetables, and in the development of procedures for identifying, contacting and interacting with the various minority communities in the region.
- o Transit Operator Coordinating Council (TOCC): established pursuant to state legislation. The TOCC, composed of the Bay Area's major transit operators and chaired by MTC's executive director, is charged with assisting MTC in meeting state and federal requirements, focusing attention and advising MTC on needed transit coordination improvements, and encouraging participation of the operators' top management in MTC's deliberations concerning public transit policy.
- o Regional Transit Productivity Committee (RTPC): established by MTC pursuant to state legislation. This Committee advises MTC on matters regarding improvements in transit productivity. The Committee membership includes representatives from management and labor divisions of the area's transit operators, from transit users, from private sector transit providers and the MTC executive director.
- o Regional Technical Advisory Committee (RTAC): consists of public works directors from each of the nine counties in the region and representatives from major cities. RTAC advises MTC on setting priorities for highway projects for inclusion in the Regional Transportation Improvement Program (RTIP) for submittal to the state and the federal Transportation Improvement Program (TIP). It also oversees the development of special studies, such as MTC's Arterial Operational Improvements Study to find ways to ease traffic congestion on routes that run parallel to freeways.
- o Joint Air Quality Policy Committee (JAQPC): consists of three members each from the Association of Bay Area Governments, the Bay Area Air Quality Management District and MTC. JAQPC reports directly to the governing boards of all three agencies with regard to any reports or activities related to compliance with state and federal clean air laws.
- o Interstate 880 Reconstruction Advisory Committee: composed of seven MTC commissioners. This Committee monitors progress on reconstruction of I-880 in response to the collapse of the Cypress Viaduct during the 1989 Loma Prieta earthquake.
- o Transportation Control Measure (TCM) Task Force: advises MTC in the development of TCMs--strategies to meet state and federal clean air standards by reducing automobile trips and traffic jams while encouraging ridesharing and mass transit use. Participation is voluntary, and includes but is not limited to representatives from business, environmental, public health, local government and community groups.

- o Fremont-South Bay Alternatives Analysis/Joint Powers Board: includes three MTC commissioners and six members appointed by other governmental agencies (BART, Caltrans and Santa Clara County). The committee advises MTC and the other governing bodies concerning Fremont-South Bay rail corridor development. Its recommendations are considered by MTC's Work Program and Plan Revision Committee.
- o San Francisco Airport/BART Extension Alternatives Analysis/Joint Powers Board: set up to advise MTC, BART and the San Mateo County Transit District regarding a proposed San Francisco Airport BART extension. MTC appoints five members, including chair and vice chair positions. Its recommendations are considered by MTC's Work Program and Plan Revision Committee.
- o Regional Transit Association (RTA) Board of Control: governed by the Bay Area's major transit system general managers. The RTA enlists the involvement of transit employees to deal with regional issues such as service coordination, joint procurement, public information, marketing, transit crime and vandalism, involvement of disadvantaged businesses and information sharing on a variety of topics.
- o Peninsula Corridor Study Environmental Impact Statement/Joint Powers Board: an advisory committee that reports to the counties of San Mateo, Santa Clara and San Francisco regarding Peninsula rail development.
- o Vasona Corridor Environmental Impact Report Joint Powers Board: advises the Santa Clara County Transit District and Santa Clara County Transportation Commission on Vasona Corridor rail development.
- o MTC/Service Authority for Freeways and Expressways (SAFE) Policy Board: established pursuant to state legislation, consists of all MTC commissioners. Provides policy direction for implementation of a motorist-aid call box system along selected routes in the participating counties of Alameda, Contra Costa, San Mateo, Santa Clara, Solano and Sonoma.

A. REVISIONS TO THE REGIONAL TRANSPORTATION PLAN (CONSISTENCY AND CONFORMITY FINDINGS--AIR QUALITY AND CONGESTION MANAGEMENT PROGRAMS)

o Revisions to the Regional Transportation Plan

MTC is mandated by the California Legislature to develop, adopt, and implement a Regional Transportation Plan for the nine counties of the San Francisco Bay Area. The Commission's enabling statute requires that it annually evaluate the RTP to determine whether revisions are needed; the RTP is then revised as required based on these evaluations. Circumstances that could trigger significant RTP revisions include:

- a. Proposals developed through the continuing regional transportation planning process carried on by, and under the supervision of, MTC.
- b. Proposals developed through the planning process as reflected in the work of other state, regional, and local agencies.
- c. Proposals that result from public input to MTC's continuing regional transportation planning process.
- d. Requirements imposed by new legislative, judicial, or administrative action.
- e. Proposals made by commissioners that have been referred to the Work Program and Plan Revision Committee for consideration and recommendation.
- f. MTC's continuing RTP environmental analysis carried on in conformance with federal and state law.
- g. Changing social, environmental, or economic conditions.
- h. The need to rectify errors, incongruities, or inconsistencies in the RTP.

The Work Program and Plan Revision Committee (WPPRC) is responsible for the review of proposed RTP revisions and associated environmental documentation. The full Commission adopts proposed RTP revisions and certifies any associated environmental documentation upon the recommendation of the WPPRC. Specific procedural requirements governing these actions are outlined in the Commission Procedures Manual.

In compliance with the California Environmental Quality Act (CEQA) and the state's CEQA Guidelines for Implementation, MTC certified the completion of the Final Environmental Impact Report (FEIR) for its Regional Transportation Plan in 1974 (MTC Resolution No. 160). Through 1988, environmental assessments of RTP revisions concluded with either amendments to the FEIR or Negative Declarations, as shown below. In 1991, the RTP was revised extensively in both form and content, partially due to new state and federal air quality requirements. Therefore, an EIR was conducted for the RTP Update prepared that year.

<u>MTC Resolution #</u>	<u>Date</u>	<u>Amendment #</u>	<u>Subject</u>
230	03/26/75	1	Airport Element
308	03/24/76	2	San Mateo Coast Corridor Revisions
415	04/27/77	3	PENTAP Revisions
594	09/20/78	4	Route 238 Revisions
732	10/24/79	5	Santa Clara Valley Corridor Evaluation Revisions
913	10/22/80	6	Regional Airport Plan Revisions
923	12/17/80	Neg. Dec.	I-280 Bay Bridge Embarcadero Connection
1053	10/28/81	Neg. Dec.	RTP Update
1188	10/27/82	7	San Francisco Bay Area Seaport Plan Revisions
1343	10/28/83	Neg. Dec.	RTP Update
1437	10/24/84	Neg. Dec.	RTP Update
1567	10/23/85	Neg. Dec.	RTP Update
1683	10/22/86	Neg. Dec.	RTP Update
1834	12/16/87	Neg. Dec.	RTP Update
1959	10/26/88	Neg. Dec.	RTP Update
2293	06/26/91	EIR	Seaport Plan Update
2338	09/25/91	EIR	RTP Update

o RTP/Air Quality Conformity Findings.

Section 176(c) of the federal Clean Air Act of 1977, as amended in November 1990, prohibits Metropolitan Planning Organizations such as MTC from approving transportation projects, programs, and plans that do not "conform" to the applicable State Implementation Plan (SIP), developed to meet federal air quality standards. For the Bay Area, the current SIP is the 1982 Bay Area Air Quality Plan. Procedures for conforming the RTP have been developed by MTC and approved by the United States District Court (Northern District of California) as a result of litigation brought in 1990.

RTP conformity will be demonstrated in two ways:

- Conformity of the Transportation Improvement Program (MTC's primary federal fund programming document), in terms of required hydrocarbon emission reductions by 1996, and attainment of carbon monoxide standards by 1995. Because the TIP transportation projects are the same as RTP short-term recommendations, conforming the TIP would be equivalent to conforming the RTP for the period up to and including 1996.
- A long range (year 2010) analysis, which consists of a comparison of the major 2010 transportation planning alternatives developed for the RTP and evaluated in the Environmental Impact Report. The emissions associated with these alternatives have been estimated, and MTC will include as the basis of the RTP an alternative that demonstrates lower emissions in 2010 than current 1990 emissions, and lower emissions than the 2010 "No Project" alternative.

For future amendments, the RTP will conform if:

- the projected emissions of the RTP with the amendment are lower than they would be if the RTP is not amended; or
- the projected emissions associated with the RTP amendment are lower than the 1996 hydrocarbon emission reduction target.

These conformity procedures will be in place until the 1982 Bay Area Air Quality Plan is revised.

o RTP/Congestion Management Program Consistency Findings.

The body of statutes that created the Congestion Management Programs (CMPs) establishes two direct links to the Regional Transportation Plan.

The first provision (per Government Code Section 65089.2) is that the regional agency shall evaluate the consistency between the congestion management program and the regional transportation plan, and that upon finding the CMP to be consistent, shall incorporate projects from the CMP capital improvement program into the Regional Transportation Improvement Program (RTIP--the state funding proposal submitted by the region to the California Transportation Commission).

MTC's criteria for finding CMPs consistent with the RTP are outlined in Resolution No. 2166 (1990), as follows:

- **Consistency with the regional transportation system as defined in the Regional Transportation Plan.**
 - Ensure that there is regional consistency among the CMP designated streets and highways systems, particularly for facilities that cross county borders. Both CMP systems and the Metropolitan Transportation System of the RTP must contain the state highway system, and it is expected that there will be considerable overlap among the arterials designated in each.
 - Require that all projects in the CMP capital improvement program (CIP) that are eligible for the RTIP must be located on, or otherwise identified with, MTC's Metropolitan Transportation System in the RTP.
 - Encourage the CMP agency to designate as part of its system any other highway or roadway that it expects will be an important part of the overall Congestion Management Program.
- **Consistency with pertinent federal and state air quality plans, as incorporated in the RTP.**
 - For federal standards, require compliance with Resolution No. 2131 (federal transportation control measures) and Resolution No. 2107, revised (criteria for considering highway projects for delay/design mitigations).
 - For state standards, require compliance with transportation control measures adopted as part of the Bay Area Clean Air Plan (to be adopted June 1991).

See prior section "RTP/Air Quality Conformity" and Appendix A-V for additional information regarding regional transportation air quality requirements.

- Consistency with the regional travel model.
 - Ensure consistency with ABAG demographic assumptions.
 - Ensure consistency with MTC's regional transportation core modeling assumptions, parameters and methodologies.

The second provision regarding the RTP and congestion management programs is that adopted CMPs found in compliance with the RTP will be incorporated into the RTP action element (Government Code Section 65081(b)). MTC will therefore annually review approved CMPs as part of the RTP review process, and incorporate relevant sections as appropriate in succeeding RTP Updates.

B. PROJECT REVIEW

MTC is responsible for reviewing applications for federal or state grants initiated by a county, city or transportation district within the region for compatibility with the RTP. Projects involving the allocation of funds for construction of the state highway system within the region are reviewed by MTC for conformance with the RTP/TIP and their provisions concerning air quality and other priorities. Other applications for projects containing transportation elements or considerations, such as seaport and airport grants and HUD grants impacting transportation, are also subject to review by MTC.

MTC has adopted criteria and procedures for the review of projects and approval of applications. In general, highway and airport projects for the maintenance or repair of existing facilities which are included in the Annual/Biennial Element of the Transportation Improvement Program (TIP) at the time of its adoption are accorded "Administrative Approval;" no further review or approval action is required from MTC. Projects that do not meet the criteria for "Administrative Approval" are subject to review by formal "Commission Review and Approval."

Projects that affect the capacity of or access to regionally significant transportation facilities usually require "Commission Review and Approval." Prior to the project sponsor's application for Commission review, MTC staff participate in project development teams and other cooperative efforts to ensure that the design concept conforms with regional mobility goals and the air quality concerns set forth in MTC Resolution No. 2107, revised. A project sponsor is required to provide appropriate documentation in support of its request for Commission approval. Information must be submitted to enable MTC staff to make a finding of project consistency with the RTP, conformity with the current TIP, and compliance with federal and state environmental impact assessment policies.

Staff prepares a formal Staff Evaluation of a proposed project and resolution approving the project and grant application, for the amounts contained in the Annual/Biennial Element. The Staff Evaluation and resolution are presented to the Grant Review & Allocations Committee for

review, and, if found satisfactory, referral to the Commission for approval. Upon approval by the Commission, notification is provided to the applicant and funding agencies involved. Where review by other concerned agencies is required, notification is also provided to the areawide clearinghouse (ABAG), and the State Clearinghouse (except for projects on the state highway system).

C. ENVIRONMENTAL REVIEW

MTC adopted its current "Environmental Procedures of the Metropolitan Transportation Commission" on February 27, 1985 (Resolution No. 1481). MTC adopted the State CEQA Guidelines (14 Cal. Admin. Code § 15000 *et. seq.*), and added a brief clarification regarding Class 1 exemption for certain transportation projects.

When environmental documents are submitted to MTC, they are reviewed by MTC staff in the context of the applicable provisions of CEQA and the State EIR Guidelines, the National Environmental Policy Act (NEPA) and guidelines for its implementation issued by the federal government, state and federal air quality plans and policies, and the California Procedures for Intergovernmental Review of Federal Financial Assistance and Direct Development Activities.

MTC staff is responsible for completing environmental reviews within the public comment period, which is usually 30 days. MTC and its staff act as a "Responsible Agency" as defined in 14 Cal. Admin. Code § 15381 for transportation projects that require a finding of conformance with the Regional Transportation Plan and/or MTC approval of a grant application. MTC and its staff act as an "interested agency" for projects that may result in significant impact(s) to transportation facilities in the nine-county Bay Area, and may comment on the environmental documents for these non-transportation projects.

MTC staff typically makes comments to ensure that cumulative impacts are fully analyzed, that needed mitigation measures such as road widenings are funded from local sources, and that consideration is given to transit, ridesharing, and other strategies for alleviating transportation impacts.

The Commission has delegated to its standing committees certain responsibilities for environmental reviews:

- o The Work Program and Plan Revision Committee (WPPRC) shall review RTP planning policies and propose amendments as appropriate. During its review, the Committee shall consider staff's summary of the review of environmental documents. The WPPRC shall provide staff with guidance when questions arise regarding issues affected by such policies.
- o The Grant Review and Allocations Committee (GR&AC) shall review proposed projects for conformance with the RTP. During GR&AC's review of grant applications, it shall consider MTC's staff evaluation of the application.

The MTC staff actions for implementing MTC's environmental review procedures are as follows:

- a. MTC staff will review environmental documents submitted to MTC, and transmit written comments, when appropriate, to the sponsoring agency.
- b. MTC staff review of environmental documents is governed in part by the MTC's planning policies as set forth in the RTP. MTC staff shall seek guidance from WPPRC whenever it finds that a significant policy or planning issue is raised during its review of an environmental document that is not fully addressed in the RTP.
- c. MTC staff shall list all environmental documents it reviews in the monthly Environmental Review Listing submitted to WPPRC.

Transportation Control Measures (TCMs) are essential elements of both the state and federal air quality plans in that they affect vehicle trips, vehicle miles of travel, the speed of vehicle travel, and vehicle delay. These factors are determinants of the level of emissions from cars in the Bay Area. Transportation control measures were first developed for the 1982 Bay Area Air Quality Plan. The Bay Area did not attain the federal standards for either pollutant in 1987, and MTC adopted additional TCMs to further reduce mobile source emissions. Authority for implementation of these TCMs is spread over a wide range of local and state agencies.

The sixteen (16) new Contingency TCMs were estimated to produce significant further reductions in hydrocarbons and carbon monoxide. These TCMs are in various stages of implementation and their status and further actions needed for full implementation are described in the Transportation Improvement Program (TIP), the region's federal programming document for highway and transit projects.

The new federal Clean Air Act passed in November 1990 defines future air quality planning requirements. A revision to the Bay Area Air Quality Plan will be completed prior to November 1993, and will include a review of existing TCMs and proposals for new TCMs as appropriate.

In addition to federal air quality planning requirements, the California Clean Air Act of 1988 establishes its own planning process to meet the more stringent California standards. MTC has submitted a TCM Plan to the Bay Area Air Quality Management District as part of a new Clean Air Plan to be adopted by the Air District in mid-1991. The Bay Area has been categorized as a "severe" area due to the fact that it is not possible to demonstrate attainment of the 9 parts per million state ozone standard by 1997 (this compares to the federal 12 parts per million standard). Relevant requirements for TCM planning include:

- o No increase in vehicle emissions beyond 1997.
- o A 1.5 persons per vehicle ridership goal to be achieved by 1999 for cars traveling in the peak period.

Table A-V-1 shows the list of federal and state TCMs that the Air District will use to determine which of the state TCMs will be adopted after the public review process is completed. Federal TCMs are discussed more fully in the Air Quality Conformity Assessment report, to be adopted in September, 1991. State TCMs are discussed in the draft State Clean Air Plan.

TABLE A-V-1
TRANSPORTATION CONTROL MEASURE LISTING

FEDERAL AIR QUALITY PLAN Original (1982 Plan)		Contingency Plan (February, 1990)	STATE CLEAN AIR PLAN Proposed TCMS
<u>ETCM 1-</u>	Reaffirm Commitment to 28% Transit Ridership Increase Between 1978 and 1983	<u>ETCM 13-</u> Increase Bridge Tolls to \$1.00 on All Bridges	<u>STCM 1*</u> - Expand Employer Assistance Program
<u>ETCM 2-</u>	Support Post-1983 Improvements in the Operators' Five-Year Plans and, After Consultation with the Operators, Adopt Ridership Increase Target for the Period 1983 through 1987	<u>ETCM 14-</u> Bay Bridge Surcharge of \$1.00	<u>STCM 2*</u> - Adopt Employer-Based Trip Reduction Rule
<u>ETCM 3-</u>	Seek to Expand and Improve Public Transit Beyond Committed Levels	<u>ETCM 15-</u> Increase State Gas Tax by 9 Cents	<u>STCM 3</u> - Improve Arcawide Transit Service (ETCM 17, ETCM 19)
<u>ETCM 4-</u>	High Occupancy Vehicle (HOV) Lanes and Ramp Metering	<u>ETCM 16-</u> Implement MTC Resolution 1876, Revised - New Rail Starts	<u>STCM 4</u> - Expedite and Expand Regional Rail Agreement (ETCM 16)
<u>ETCM 5-</u>	Support Rides Efforts	<u>ETCM 17-</u> Continue Post-Earthquake Transit Services	<u>STCM 5</u> - Improve Access to Rail
<u>ETCM 6-</u>	Continue Efforts to Obtain Funding to Support Long Range Transit Improvements	<u>ETCM 18-</u> Sacramento-Bay Area Amtrak Service	<u>STCM 6</u> - Improve Intercity Rail Service (ETCM 18)
<u>ETCM 7-</u>	Preferential Parking	<u>ETCM 19-</u> Upgrade CalTrain Service	<u>STCM 7</u> - Improve Ferry Service (ETCM 17)
<u>ETCM 8-</u>	Shared Use Park and Ride Lots	<u>ETCM 20-</u> Regional HOV System Plan	<u>STCM 8</u> - Construct Carpool/Express Bus Lanes on Freeways (ETCM 4, ETCM 20)
<u>ETCM 9-</u>	Expand Commute Alternatives Program	<u>ETCM 21-</u> Regional Transit Coordination	<u>STCM 9</u> - Improve Bicycle Access
		<u>ETCM 22-</u> Expand Regional Transit Connection Ticket Distribution	<u>STCM 10</u> - Youth Transportation
		<u>ETCM 23</u> - Employer Audits	<u>STCM 11</u> - Install Freeway Traffic Operation [TOS] (ETCM 26)
		<u>ETCM 24</u> - Expand Signal Timing Program to New Cities	

TABLE A-V-1
TCM LISTING (Continued)

ETCM 10 - Information Program for Local Governments	ETCM 25 - Maintain Existing Signal Timing Programs	STCM 12 - Improve Arterial Traffic Management (ETCM 24, 25)
ETCM 11- Gasoline Conservation Awareness Program (GasCAP)	ETCM 26 - Incident Management on Bay Area Freeways	STCM 13 - Reduce Transit (ETCM 21)
ETCM 12- Santa Clara County Commuter Transportation Program	ETCM 27 - Update MTC Guidance on Development of Local TSM Programs	STCM 14 - Vanpool Liability Insurance
	ETCM 28 - Local Transportation Systems Management (TSM) Initiatives	STCM 15 - Provide Carpool Incentives
		STCM 16* - Indirect Source Control Program
		STCM 17* - Public Education
		STCM 18* - Zoning for Higher Densities Around Transit Stations
		STCM 19* - Air Quality Element for General Plans
		STCM 20 - Conduct Demonstration Projects
		STCM 21* - Implement Revenue Measures
		Market Based Contingency Measures
		- Smog Free
		- Gas Tax Increase
		- Congestion Pricing
		- Toll Road
		- Parking Fees
		(ETCM) - indicates federal TCM included in State TCM
		* Defined by Bay Area Air Quality Management District to be Reasonably Available Measures

AB84 Project Studies Reports (Various sponsors and dates): Studies that provide a detailed description of the scope and estimated costs of proposed projects. Project study reports are required of any capacity-increasing project proposed on the state highway system before the project is programmed in the STIP.

Bay Area Air Quality Plan (ABAG, BAAQMD, MTC; 1982): Outlines the Bay Area's air quality problems and describes the control programs needed to mitigate them. It addresses air quality standards set by the federal government and sets forth a schedule for adopting and implementing programs to attain federal standards for ozone and carbon monoxide.

Bay Area Freeway Reliever Routes Study (MTC, 1989): Identifies a small number of case study arterial routes as examples of how a more flexible federal funding program might provide peak period capacity in corridors with congested freeways. Improvements to these reliever routes that would reduce bottlenecks or prevent bottlenecks from occurring as traffic volumes increase are recommended.

Bay Area '91 Clean Air Plan (draft) (ABAG, BAAQMD, MTC; 1991): Describes Bay Area's plan for meeting state clean air laws for control of ozone and carbon monoxide. It discusses current and forecasted air quality levels, and presents a list of possible strategies for improving air quality. An adopted list of strategies will be presented in the final plan.

Bay Area Regional Arterial System Study (MTC, 1991): Presents the regional arterial system used in the Metropolitan Transportation System described in the 1991 RTP. It describes the criteria used to select the routes, possible arterial improvements to meet future transportation needs, and a complete list of regional arterials for each Bay Area county.

Commission Procedures Manual (MTC; 1981, revised periodically): Describes the statutory roles and responsibilities of MTC, the structure of the Commission, conduct of Commission meetings, and the organization and conduct of Commission Committees.

The Commission Report (Bay Vision 2020, 1991): Final Report of Bay Vision 2020, a voluntary group of business, academic, and non-profit leaders in the Bay Area. The report presents the group's recommendations for coping with transportation, land use, and environmental problems forecast for the Bay Area over the next 30 years.

County Sales Tax Expenditure Plans (Various sponsors and dates): In those counties that have passed sales tax measures to fund transportation projects, expenditure plans have been developed to indicate how generated revenues will be spent. These plans provide approximate costs for desired projects, and usually present a list of projects in priority order.

Environmental Impact Report for the 1991 RTP (MTC, 1991): Provides legal basis for adoption of 1991 RTP. It presents a series of alternative transportation networks, compares transportation system performance on various criteria, and evaluates the potential environmental impacts that could result if these networks were developed.

Interoperator Schedule Coordination Improvement Study (MTC, 1988): This study evaluates how well the service schedules of the eight major Bay Area transit operators are coordinated with one another, and develops scheduling improvements that can lead to improved system coordination and greater convenience for regional transit passengers.

Key Considerations for Developing Local TSM Programs (MTC, 1988): This guide provides an updated reference to assist local governments develop traffic mitigation approaches suitable to their local needs. It presents an inventory of key issues which must be addressed before specific traffic mitigation strategies are adopted.

Moving America: New Directions, New Opportunities (U.S. Dept. of Transportation, 1990): Statement of national policies and strategies for transportation in "post-Interstate" period. Emphasis on shifting responsibilities for transportation investments, maintenance and expansion to state and local governments and the private sector.

Productivity Improvement Program (MTC, 1986): A forerunner of the Transit Productivity and Coordination Evaluation. The PIP coordinated improvements to transit cost-efficiency, cost-effectiveness, or service-effectiveness among Bay Area transit operators.

Projections '90 (ABAG, 1990): Latest in a series of population and economic projections by the Association of Bay Area Governments (ABAG), this document provides forecasts of population, households, labor force, income, and jobs for each city and county in the Bay Area. Data are provided for the base year 1980, estimated for 1985, and forecasted for 1990, 1995, 2000, and 2005.

Regional Airport System Plan (MTC, BCDC; 1982, revised 1988): Provides coordinated planning for regional airport improvements and ground access connections. The Regional Airport System Plan serves as the airport element for the RTP.

Regional Paratransit Plan (MTC, 1990): This report documents regional efforts to provide sufficient paratransit for residents who cannot use conventional fixed-route transit. It identifies existing unmet paratransit needs; funding needs and current and potential sources of funding; methods to improve paratransit efficiency, equity, and quality; existing mechanisms for coordination of services; and MTC's role in supporting local paratransit programs.

Regional Plan (ABAG, 1980): Presents goals, objectives, policies and actions for the Bay Area, as well as strategies and procedures for meeting the region's objectives. Developed by ABAG, the plan includes topics such as housing, economic development, environmental quality, health and transportation. The RTP serves as the transportation component of the Regional Plan.

San Francisco Bay Plan (BCDC, 1969): Identifies the need to protect and enhance the San Francisco Bay on a regional basis. Presents goals, objectives and policies related to the Bay and development activities on its shores.

Regional Transportation Improvement Program (RTIP) (MTC, issued biennially): A list of proposed transportation projects submitted to the CTC by MTC for the nine-county Bay Area. The individual projects are first proposed by local jurisdictions, then evaluated and prioritized by MTC for submission to the CTC. The RTIP has a seven year planning horizon, and is updated every two years.

San Francisco Bay Crossing Study (MTC, 1991): Identifies several alternatives for improving travel between the East Bay and San Francisco and the Peninsula. The study examined the travel characteristics and environmental impacts of each alternative, estimated capital and operating costs, and evaluated potential funding sources.

Seaport Plan (MTC, BCDC; 1982, revised 1988): Provides coordinated planning for marine terminal activities in the Bay Area, with an emphasis on cargo movements. The Seaport Plan serves as the maritime element for the RTP.

A Study of Arterial Operational Improvements (MTC, 1989): Describes an assessment of promising operating strategies and technologies for signal coordination and transit priority, in order to provide greater capacities on the arterial components of the metropolitan transportation system. A corridor-level feasibility analysis is presented, applying these strategies and technologies to a major Bay Area arterial (San Pablo Avenue in Alameda and Contra Costa counties).

Traffic Mitigation Reference Guide (MTC; 1984, updated 1986): This report provides an overview of traffic mitigation measures available to local governments, developers and employers. It discusses costs and effectiveness of particular strategies, and provides specific examples of successful implementation.

Transit Productivity and Coordination Evaluation (MTC, 1990): This report reviews and evaluates productivity and coordination projects undertaken by transit operators in the Bay Area in FY 1989-90. Current status of projects, implementation plans, and progress towards meeting coordination objectives are described.

Transportation Control Measures (TCM) Plan (MTC, 1990): MTC's primary input into the '91 Clean Air Plan. This plan identifies potential reductions in mobile source emissions of air pollution.

Transportation Improvement Program (TIP) (MTC, issued annually): A federally-required document produced by MTC for the nine-county Bay Area that states the investment priorities for transit and transit-related improvements, mass transit guideways, general aviation and highways. The TIP is MTC's principle means of implementing long-term planning objectives through specific projects.

2005 HOV Lane Master Plan (MTC, Caltrans, CHP; 1990): Identifies existing, programmed, and proposed HOV lane segments for the Bay Area. It is the first step in developing a comprehensive plan to promote use of HOVs in the region.

2005 HOV Program Prioritization Project (MTC, 1990): Examines effectiveness of a variety of HOV support facilities and programs, such as park-and-ride lots, preferential parking policies, and enforcement of HOV lanes. The report also places in priority order for implementation those unfunded HOV lane segments identified in the 2005 HOV Lane Master Plan.

Urban Freeway Gridlock Study (Caltrans, 1988): This study was commissioned by the California Legislature to investigate the impacts of large trucks on peak-period freeway congestion. It provides information on truck volumes and incidents on freeways, analyzes various freeway and truck management strategies, and presents recommendations for programs and policies to improve truck traffic management on state freeways.

What We Know and Don't Know About Traffic Mitigation Measures (MTC, 1990): This report presents the most recent available information on the effectiveness of various traffic mitigation measures. It also emphasizes gaps in information regarding measure effectiveness.

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